amateur radio

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FEBRUARY
1966

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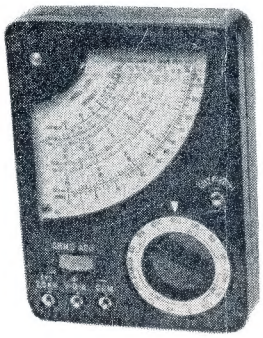

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FEDERAL COMMENT

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43K . . . AND A SUGGESTION

This business of I.T.U. and associated matters may seem, to many Amateurs, a topic thrashed to death by this Institute. Whilst there have been many appeals made in the past for considered views on this all important question of Amateur frequencies, it is true to say that we have been rather narrow in our view of the situation, and little attempt has been made to find out what other Societies in our Region think, and in particular what are their most pressing problems when it comes to the question of frequencies, and operating conditions.

Region III. is made up of Amateurs from Burma, Ceylon, Hong Kong, India, Japan, and of course, Australia, with a total licensed Amateur population of some 43,000; not large as Amateur populations go in other parts of the globe, and when one considers that 38,000 are to be found in Japan, our own total is rather insignificant by comparison.

It is rather refreshing to find, therefore, that the Amateur Radio Society of India with 360 members have had sufficient inspiration to make a suggestion which can do nothing but good if we can follow it through.

Writing in the official Newsletter of the A.R.S.I., the Western Zone have proposed that "to safeguard Amateur frequencies we must establish an organisation of member societies of the I.A.R.U. in Region III. (similar to that which has operated so successfully since 1950 in Region I. (Europe and Africa). If this is done a regular exchange of views at executive level will become possible through the medium of Regional Conferences and Regional Committees."

We would like to be able to meet personally representatives from other member societies in this Region, and through discussion, find some common ground which, it is hoped, would reflect the aim which, basically, all Amateurs share. A united front in Region III., with one or more delegates from member countries demanding our rights at the next conference, must surely stand a chance of success. Perhaps all this is wishful thinking; but by no means is the situation overstated.

We realise that to do this money is required and apart from Australia and Japan what other country has the Amateur population upon which it can depend for financial support? To send a delegate to an I.T.U. conference is one thing, and an expensive one at that, so that any interim regional conference appears, in the forseeable future, to be rather difficult to achieve.

Nevertheless this Executive will do all in its power to continue the liaison with other societies, and believe that close contact by correspondence is the first step in getting organised. Apart from the problem of international frequency usage, there will be many side benefits from a closer exchange of views.

For example, how many Amateurs in this country know the licensing and regulatory provisions in other countries? So what? How will that affect me, and in any case what good will it do me? Perhaps a direct answer cannot be given right now, but it would be foolish to pretend that one cannot learn a new wrinkle from someone else, and when it comes to operating privileges, take a look at what JA Amateurs have to work with.

In any event, this Executive will be pursuing the suggestion of the A.R.S.I. most avidly, with the hope that in the end, we, in Region III. will be better equipped to face the problems in the years ahead.

PETER D. WILLIAMS, VK3IZ, FEDERAL SECRETARY, W.I.A.

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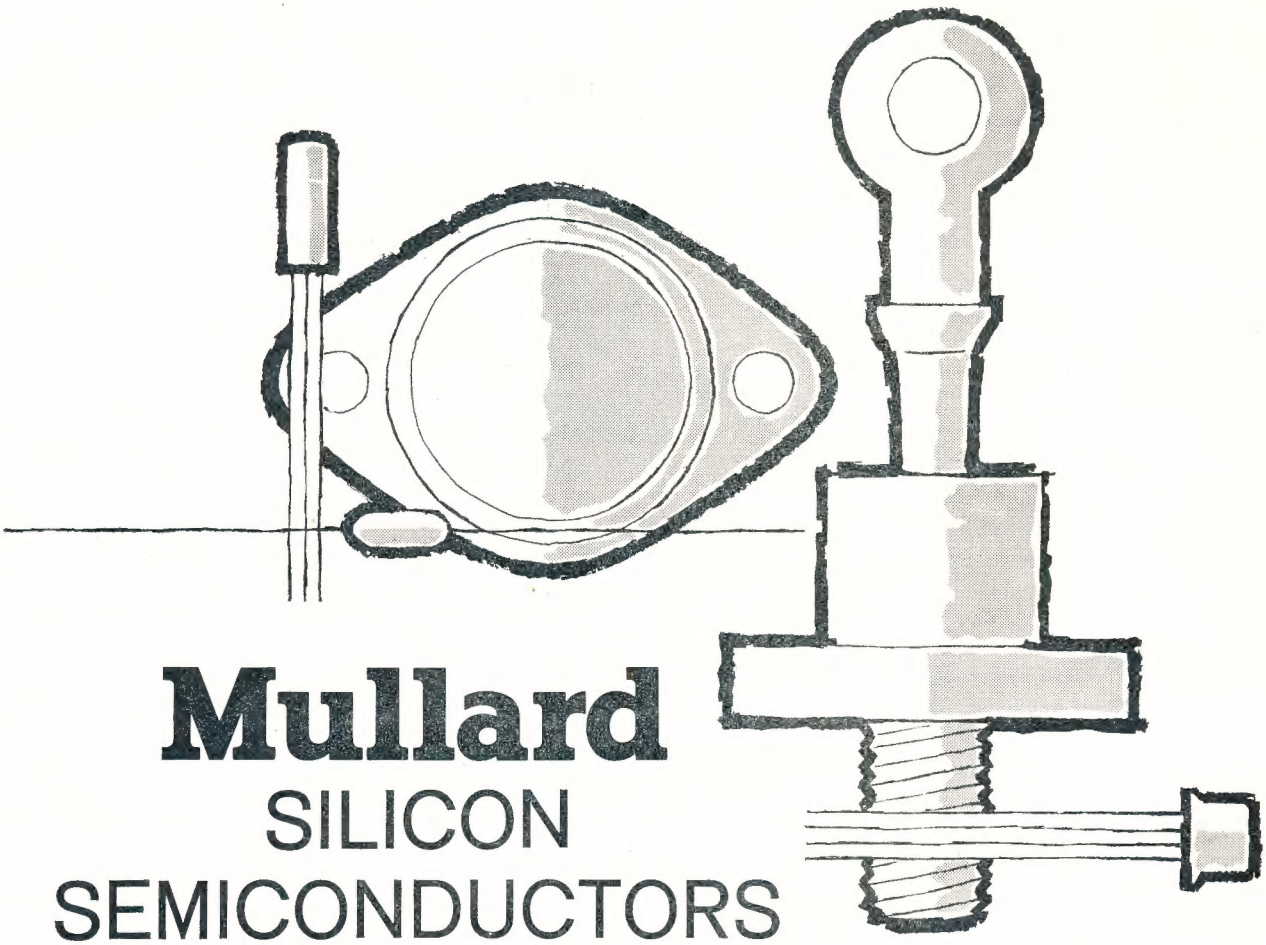

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MATTERS MOBILE*

A Review of Circuits and Information of Particular Interest to Mobile Operators

PAUL HARRIS, G3GFN

WHILE the contents of this series will mainly be of interest to mobile operators, such is the nature of our hobby that no one section can be completely divorced from the others. Thus it is quite probable that those who have no active interest in mobile operation may find items of circuitry and ideas worthy of inclusion in fixed station equipment.

The object is to publish circuits and technical information, together with wrinkles, dodges and hints which either improve the performance of equipment under mobile conditions, or aid operating efficiency. In addition, any matters pertinent to mobileers' interests will also be covered. Thus the scope will be wide.

Our hobby permits almost unlimited individuality in the construction of equipment. From this it seems reasonable to suppose that there must be hundreds, possibly thousands, of useful ideas, novel circuit arrangements and unusual "bitsa"—bits from this and bits from that—permutations which, while of potential interest to many, have never been published. This is probably especially true of the mobile brigade where nearly every installation is tailor-made for the vehicle concerned.

The purpose of this preamble is to suggest that if you have any tested circuits which are unusual and of value to your fellow mobile operators, and you are prepared to pass on the benefit of your ideas and experience, then why not send them to your magazine for inclusion?

All that is needed is a reasonable description and, where applicable, an easily understood circuit diagram or sketch. Particularly welcome will be photographs of equipment and installations.

A HALTER MICROPHONE

The recent hiatus over the Ministry of Transport's proposed order to make it an offence to talk into a radio transmitter whilst in control of a moving vehicle, must, if we are to be honest with ourselves, at least have caused us to carefully re-appraise our operating methods.

While talking when driving can hardly be more hazardous than listening to a normal car radio, there is no doubt but that some mobile microphones do leave a lot to be desired. There can be no argument against the statement that if one hand is engaged in holding a microphone, and perhaps pressing a p.t.t. switch at the same time, then under certain conditions, one's ability to steer is affected. Anyone who has tried to negotiate a sharp turn, or a roundabout, while using such a microphone will not dispute this statement.

A microphone arrangement which goes a long way to solving this difficulty is that used in most radio taxis. In this, the microphone head is mounted either on a swinging arm or a length of swan neck tubing. Even this is not perfect for although it leaves both hands free for control of the car, the driver has to maintain his head in a fixed position, and this restricts his field of vision. It has been argued that this is less serious than having one hand engaged, but this is debatable.

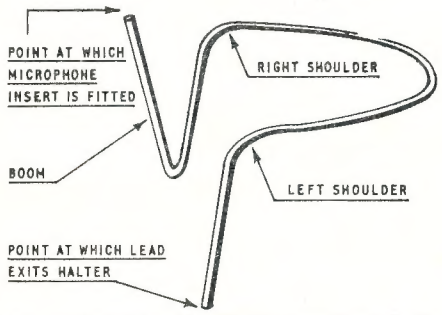

Fig. 1.—General view of the combined halter and microphone mounting boom.

Some three years ago, the writer was shown an ingenious idea by G3KLM which has all the advantages of a fixed boom microphone, but solves the problem of having to maintain one's head in a fixed position.

The device is shown in Fig. 1. From this it will be seen that it takes the form of a halter which is worn around the neck, and which incorporates a microphone mounting boom, the boom being positioned so that the microphone head is adjacent to the mouth of the wearer. No matter how much the wearer moves or turns, so the boom mounted microphone follows and maintains its proximity to the mouth. In addition to this advantage, since the microphone lead is run through the centre of the boom, this is kept out of harms way.

The gadget is fabricated in one piece from a length of ⅜" diameter copper tubing—obtainable from all plumbers' suppliers. The U section of the halter goes around the neck of the wearer with the straight section running down the left hand side of the chest. On the right hand side, there is another, but shorter, downward running section which bends upwards again. At the point where this commences to rise, that is at the bend, it is angled so that its top is central to the U. This will then position the microphone head—which is fitted to this rising piece—adjacent to the wearer's mouth.

Any of the usual inserts may be fitted to the boom, and the lead routed through the tubing in the manner described. Once correctly shaped to the satisfaction of the individual, the gadget may be chromium plated, but just as good is to carefully wrap it with plastic insulation tape.

Compared to arrangements based on headphone bands, or frames of glasses, this halter leaves one virtually unencumbered. Incidentally, the writer has found that this assembly is very pleasant to use when operating a fixed station.

The only real disadvantage with this idea is that p.t.t. is not possible, but compared to its advantages, this is a small price to pay. However, it would be feasible to include a transmit-receive switch in the assembly by mounting this in a small box fitted to the end of the halter from which the lead exits.

A SIMPLE NOISE LIMITER

Apart from i.f. noise silencers, one of the most effective noise limiters is the T.N.S.—Twin Noise Squelch—circuit featured in the "CQ Mobile Handbook". Unfortunately, requiring two valves to achieve its performance, it does not enjoy the popularity which it deserves under mobile conditions where the expenditure of every extra milliamp. has to be very carefully considered.

The writer recently tested the circuit of a series limiter used in the Eico 760 Citizens Band Transceiver. Whilst the T.N.S. still has the edge, this circuit far excels any others so far tried. Of particular interest is the manner in which it handles ignition noises. They virtually disappear. Needing only one valve, one half of which is used as the detector anyway, this limiter is ideal for inclusion in mobile receivers.

The circuit is shown in Fig. 2, and as will be seen, one gets a lot for a little. The circuit not only functions as a detector and a limiter, but also provides fast attack a.g.c., itself most desirable under mobile conditions. No particular comment should be needed

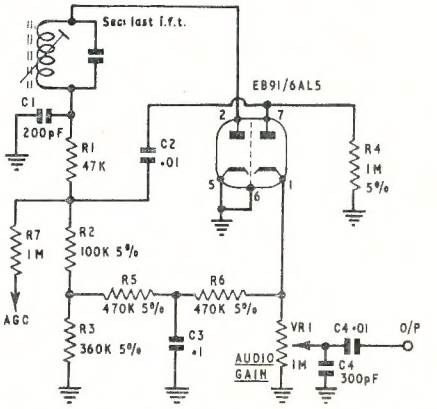

Fig. 2.—Automatic noise limiter with good performance on ignition pulses. The circuit also functions as a diode detector and provides a.g.c.

* Reprinted from R.S.G.B. "Bulletin," Aug. '65.

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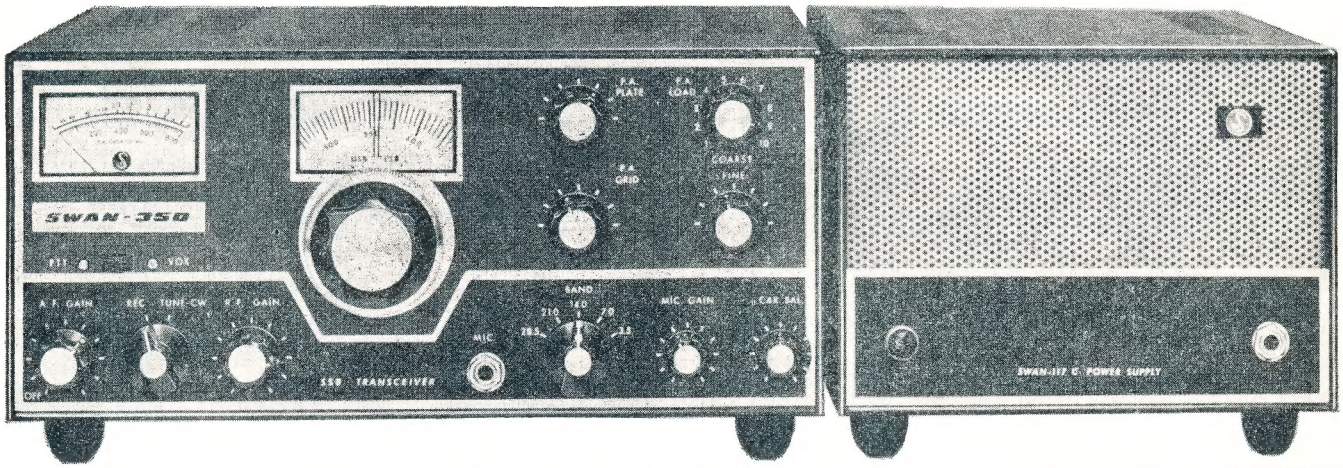

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on the circuit, except to observe that **close tolerance** resistors must be fitted in the positions shown.

Constructionally, there are some points to watch. First, the valve-holder must be of low-loss insulation to prevent noise pulses leaking across it and so by-passing the limiter. Secondly, the valve should be fitted with a screening can, and thirdly, R1 and C4 should take the shortest possible route between the i.f. transformer and the anode of V1a.

Since the circuit is self adjusting, there is no need to incorporate a limiter on-off switch. As such switches invariably lead to leakage between input and output of a limiter, so degrading performance, if they can be omitted, then so much the better. If you should experience audio distortion to any degree with this limiter, it will be because the other fellow is riding his modulation far too hard. At 100% modulation, clipping just starts.

AERIAL MOUNTING

For those who like mobile aerial installations neat and reasonably unobtrusive, the Ekco car radio aerial type CA225/4 will be of particular interest.

The base of this unit, which may be wing or scuttle mounted, is moulded in low-loss polystyrene, the underside of which is fitted with a stout rubber gaiter, making it water-proof. The 200 ohm co-axial cable fitted to the unit when it is supplied may be easily removed, and 75/80 ohm, 50 ohm or 35 ohm cable substituted.

The special feature of this aerial is that the mounting base may be retained on the car by the use of an additional half-nut, so allowing the top section to be removed at will. For those who have "getting-in-the-garage" trouble, this is a boon. In addition, if you operate on more than one band, say 160 mx and 4 mx for example, then different aerials may be mounted on the same fitting by merely screwing them on to the protruding threaded stud. In the case of the two bands cited, on 160 mx a base loading coil would be fitted first, and the extending sections of the aerial to the top of the loading coil. When on 4 mx all that is needed is to fit the extending sections in the normal manner, and then draw them out to the optimum length.

One other advantage is that when away on holiday, or if you have to street park overnight, then the aerial can be removed easily.

WIRING HEATERS FOR 12V. AND 6V. OPERATION

Many items used for mobile are restricted in use simply because the heater circuits are wired for operation on 12v. only, and it is not always convenient, or possible, to provide this voltage in the home station.

For many years the writer has been wiring the heater circuits of his mobile equipment so that it can be operated on either 12v. or 6v. One advantage of this arrangement is that when testing newly constructed gear, this can be done by bringing into service an existing power supply in the fixed station. The mobile equipment can therefore be operated from the fixed station should the need ever arise, and furthermore, such a facility can avoid duplication of equipment.

This facility is provided by arranging the heater wiring of the valves in a balanced series/parallel arrangement according to Fig. 3.

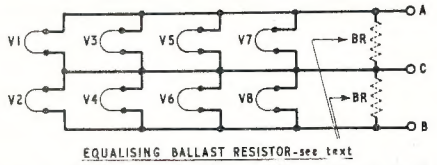

Fig. 3.—Universal heater wiring allowing the optional use of 6 volt or 12 volt supply.

First, the individual heater currents are noted, and then the valves are arranged in a manner similar to that of Fig. 3 so that the **total** current of the valves connected between points A and C is equal to the **total** current of the valves connected between points C and B.

Now unless you are particularly lucky, the current in the arm AC will not equal that in the arm CB. To balance the currents, a ballast resistor will have to be fitted to the side which is short of current to make up the deficiency.

With 12 volts applied between AB, and with the currents balanced, there will be 6 volts between AC and 6 volts between CB. From this it will be seen that the ballast resistor will have to dissipate the current difference at 6 volts. From Ohm's Law, the value of the ballast resistor may be determined. The working wattage will be $W = I^2R$, where I is the difference current. To ensure reasonably cool working, the resistor fitted should have a wattage rating of at least three times that derived from the foregoing calculation. One word of warning! Do be sure that the ballast resistor is fitted to the side of the circuit which is short of current.

In use, terminal B is connected to chassis. When operating on 12 volts, C is left open, and the supply connected to A. For operation on 6 volts, A is connected to chassis—along with B—and the supply taken to C.

If one of the valve heaters becomes open circuit, then the current of this valve will be shared by the remaining valves in its arm of the circuit. Rarely, if ever, will this cause any damage. Under such circumstances, since the equipment will not operate correctly, one is left in no doubt as to the fact that there is a fault.

When valves with a centre tap are used, such as a 12AX7 for example, one live pin is wired to A, the other to B, and the centre tap to C.

NOTABLE DOUBLES

Two valves in one envelope are always of interest to the mobileer for they save current, heat, and cost. One particularly useful little valve is the ECF82 which combines a triode and pentode in one envelope. The triode when used as an audio voltage amplifier will give a stage gain of about 60, and performs very well as either a crystal or variable frequency oscillator. As for the pentode, having a slope of 5.2 mA./v. it makes a good i.f. amplifier, or r.f. amplifier on the lower frequencies. In transmitter service, the pentode shows high efficiency as a doubler or trebler, but in this class of operation, care must be taken to ensure that the screen grid dissipation is not exceeded.

An example of the circuitry which can be woven around this valve is shown in Fig. 4. This is a crystal oscillator and multiplier sequence for a 4 mx transmitter, and will give 1.5 mA. of drive through a 22K ohm resistor in the grid of a 5763 p.a. running 9 watts input. Thus two valves, an ECF82 and a 5763, will make up into a very compact, low power, 4 mx transmitter.

The American number for the ECF82 is 6U8. It has been noted that a 6U8A has recently been introduced, and from information available, this appears to be an improved version of the 6U8.

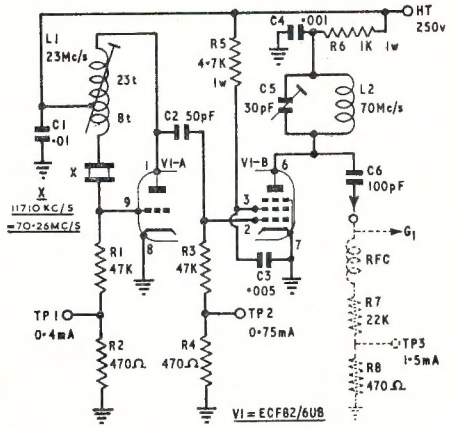

Fig. 4.—Single valve 70 Mc. driver. L1, 31 turns 28 s.w.g. enamel, close wound on ¼ in. former with iron slug. Tap at eight turns. L2, seven turns 18 s.w.g., air wound ¼ in. inside diameter. Turns spaced wire diameter. TP1, TP2 and TP3 indicate currents to be expected between test points and earth. Components shown dotted are grid circuit of following stage.

THIEF-PROOFING EQUIPMENT

As some of us know to our cost, merely locking a car is not sufficient to deter a determined thief.

Since having been through the bitter experience of having equipment stolen, the writer has incorporated the following arrangement in his car. While it does not stop a potential thief getting at the equipment, nor from taking it out, once it is moved, even fractionally, from its correct position, the car horn sounds, and nothing can stop it. The resulting din is more than enough to deter a thief who, above all, does not want attention drawn to himself.

The circuit arrangement is shown in Fig. 5. Its operation relies on the fact that the equipment is securely mounted, and that the back of the equipment presses on a microswitch firmly fitted either directly to the bodywork of the

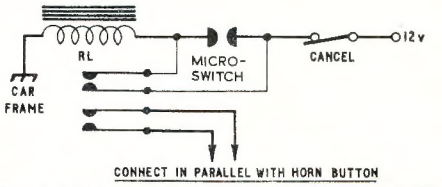

Fig. 5.—Burglar alarm circuit. The "cancel" switch is normally ON. To stop the alarm, this switch is opened.

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car, or to an arm anchored to the bodywork. If the equipment is moved, then the microswitch operates and sets off the alarm. At this stage it should perhaps be mentioned that the microswitch is of the "press-to-open" variety.

The operation is not quite as simple as has been described for the circuit is so arranged that even if the equipment is restored to its correct position, the horn does not cease to operate. It just goes on and on and on and on . . . This interlock is quite vital. For ease of circuit tracing, the primary wiring has been illustrated in heavy lines, while the interlock is shown in lighter lines.

The heart of the arrangement is the double pole relay fitted with contacts which close when the relay is energised. The primary circuit starts from the negative terminal of the battery and runs through the alarm-cancelling switch, and then through the microswitch to the relay energising coil to the frame of the car. As it stands at the moment, and with the equipment in position, the microswitch is pressed and in the off position. If the equipment is withdrawn, the pressure on the microswitch is released, the circuit completed, and the relay closes. One set of contacts on the relay wired in parallel with the horn button completes the horn circuit. At this stage, if the equipment is returned to its correct position, or the leads to the microswitch cut, then the horn would cease. To avoid this, an interlock is provided. This is achieved by arranging the second pair of contacts on the relay to be in parallel with the microswitch; thus once the relay is closed by the action of the microswitch, one set of the relay contacts maintain it locked "on".

To stop the alarm you either have to know where the cancelling switch is located, or dive under the bonnet to disconnect the battery—and no thief will hang around that long.

The value of this alarm switch depends on how the cancelling switch is concealed. Disguising is often better than hiding, and in the writer's car it is in full view of anyone who enters.

SHOESTRING MODULATION

The writer is always intrigued by descriptions of modulators which, for d.c. inputs of 15 watts or less, employ push-pull modulating valves. On Top Band, or for any transmitter with a d.c. input of less than 15 watts, there is no need to go to such lengths to modulate the carrier in a satisfactory manner.

Taking Top Band as a practical example, a single 6BW6 will, if allowed to do so, run an input in excess of the legal limit. The interesting thing about the 6BW6 valve is that its impedance as a p.a. for 10 watts input (40 mA. at 250 volts) is near to its optimum load impedance as a single ended output stage for the same value of h.t. supply. The figures are: p.a. impedance, 6.2K ohms; optimum load impedance, 5.5K ohms at Va and Vs of 250 volts. Since the 6BW6 as an audio output valve will deliver 5.5 watts, this is quite enough power to fully modulate a p.a. input of 10 watts. Indeed, under speech waveform conditions, and a reasonably accurate match, the audio output is likely to be quite a bit higher.

Using these facts, gleaned from the valve manufacturer's data, considerable simplification becomes possible. The principal advantage is derived from the fact that the modulation transformer needs only have a 1 : 1 ratio, and where this ratio is required, with the arrangement to be shown, a full blown modulation transformer is quite unnecessary.

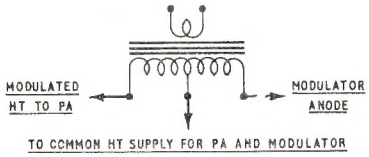

Fig. 6.—Method of using centre-tapped audio output transformer as a modulation transformer.

The circuit is shown in Fig. 6. In this a standard centre tapped audio output transformer is used in such a manner that, as far as the p.a. is concerned, it "looks" like a modulation transformer. The transformer has to fulfil two requirements: the impedance on either side of the centre tap should be equal to, or near to, the desired impedance—in this case between 5.5K ohms and 6.5K ohms; each half of the winding must be able to carry the current expected to flow through it. Many such transformers are freely available, and moreover, at a cost far below that of a "normal" modulation transformer.

If the equipment in which this idea is incorporated is a transceiver, then the modulating valve can be arranged to do double duty and serve as the output stage of the receiver. Under these conditions the speech coil winding on the transformer can be coupled to a loudspeaker in the normal manner. Naturally, arrangements have to be made to mute the loudspeaker during transmission, and in addition, the transmitter switching should be arranged so that the cathode of the p.a. is disconnected to avoid the p.a. valve acting as a diode connected to the far end of the output transformer while receiving.

While the 6BW6 has been specifically cited, this method is not restricted to this valve alone, neither is it essential that the p.a. and modulating valves are of the same type. Many combinations are possible as a study of valve data will show.

This system has been used by the writer in various low power transmitters and transmitter/receivers. There have never been any reports of under-modulation or poor quality. Quite aside from its advantages circuitwise, it materially assists in getting the proverbial gallon into the pint pot.

FIELD STRENGTH INDICATOR

One problem faced by all mobile operators, irrespective of the band on which they operate, is to monitor the level of r.f. radiated by the transmitting aerial. It is neither practical, nor accurate, to use a field strength meter inside the car to determine what is going on outside.

One way round this is to use an external aerial coupled to a F/S meter inside the car, but unless one is prepared to have aerials sprouting out all over the place, hardly ideal.

A neat way of overcoming the need to fit a special aerial is to use a wing mirror as the pick-up for the internal F/S meter. All that is needed is to insulate the wing mirror from the bodywork of the car, and then run a lead from the fixing nut into the car.

On the l.f. bands this can be a plain lead, but on 4 mx, co-axial cable should be employed. If both l.f. and v.h.f. operation are undertaken, a co-axial lead should be fitted, but without earthing the outer braiding at either the mirror or the saloon ends. When used on the l.f. bands, the F/S meter should be arranged so that the inner and outer of the co-axial cable are connected together, thus turning it into a plain lead. On v.h.f., the F/S meter should be arranged to treat the lead as normal co-axial cable.

A method of bushing a wing mirror for this purpose is shown in Fig. 7.

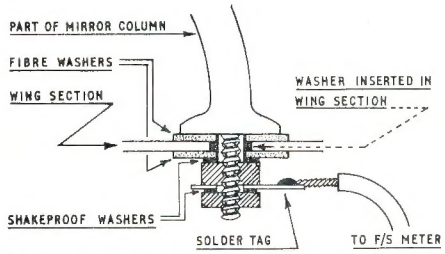

Fig. 7.—Insulating a wing mirror to allow it to be used as the aerial for a field strength meter.

MICROPHONE HEAD AMPLIFIER

Most of the diminutive inserts of Japanese origin—such as would be suitable for the halter-boom for example—have impedances ranging from 25 ohms to 250 ohms, and so require the use of a matching transformer. By the use of a single transistor in a suitable pre-amplifier, such a transformer may be dispensed with, and in mobile working this has certain advantages.

The pre-amplifier shown in Fig. 8 was designed specifically for microphones with this range of impedances, but of greater interest, employs a couple of "ideas" so that, although it is positioned at the microphone head, only a single screened lead is needed to (a) bring the output from the pre-amplifier to the main amplifier, and (b) take the supply up to the pre-amplifier.

The first circuit oddity to note is that the forward bias is taken from the collector. This forward bias is thoroughly decoupled by R3 and C2 so that

(Continued on Page 8)

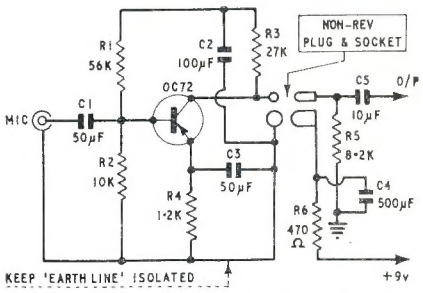

Fig. 8.—Microphone pre-amplifier for inserts with an impedance of between 25 ohms and 250 ohms. This unit may be constructed in a small metal cigar case and used as a co-axial in-line amplifier.

MATTERS MOBILE

(Continued from Page 7)

none of the output at the collector is fed back into the base of the transistor. By using this arrangement, one lead is dispensed with, namely that usually needed to take the supply to the forward bias circuit.

The second oddity relates to the input circuit on the main equipment. Either a co-axial socket can be used, in which case it must be **fully insulated** from the chassis, or a two-pin non-reversible socket with matching plug as shown on the diagram. The inner lead of the screened cable goes to the main amplifier via the capacitor C5. The resistor R5 is the load for the transistor collector circuit, which, it should be noted, runs from the live tag on the socket to chassis negative (earth). The screen of the cable is not earthed in the usual manner, but only earthed for signal currents by C4. The screened outer of the cable is continued, via the resistor R6 to a source of 9 volts positive. In point of fact, any voltage between 6 volts and 9 volts can be used, and this circuit has been arranged so that the source of this voltage is the cathode of one of the valves in the main equipment across whose cathode bias resistor this voltage exists. From this it will be appreciated that there is no need to arrange a separate supply for this pre-amplifier.

One point which will be apparent is that the screening of the linking cable is positive with respect to the chassis and other metalwork of the equipment by the supply voltage to the pre-amplifier. Thus the linking cable must be provided with a sheath over its braiding. If this braiding does become shorted to chassis or the metalwork, then it will short-circuit the supply to the transistor. Since the source voltage for the transistor comes from the cathode of a valve, under these conditions the valve would be running without bias. To protect against such an eventuality, R6 is included in series with the supply source so effectively preventing damage to the valve concerned.

☆

OVERLAY TRANSISTORS

A new emitter electrode structure called the "Overlay" was first used commercially in the power transistor 2N3375. This transistor, introduced in 1964, has 156 emitters tied together in parallel by diffused and metallised regions. This approach provides a considerable increase in the emitter edge-to-area ratio and a proportionate reduction of the input time constant. This has permitted a practical transistor with a 3 watt output at 400 Mc. or 7.5 watts at 100 Mc. for 1 watt drive.

The production of this type of transistor is exacting and very tricky, which accounts for its present high cost. In lots of 1,000, the price is around $14.

Another type, the 2N3866, used for u.h.f. driver applications, has 16 emitters each 0.15 mils. wide by 2 mils. long. Due to a reduction in input capacitance, the frequency response has been improved and the unit has a minimum gain of 10 db. at 400 Mc. for 1 watt of output power. It sells in lots of 1,000 for about $3.

There are a number of the well known companies now producing these devices, and types range from 50 watts at 50 Mc. at 28 volts, through 10 watts at 400 Mc. at 28 volts, to 1 watt at 800 Mc. at 28 volts. A number of the types operate on voltages around 12 to 14 volts and prices are in the vicinity of $28.

Although the overlay transistor appears to be the answer to v.h.f. and u.h.f. semiconductor devices for some time to come it may still be out of the price range for the average Amateur unless quantity requirements and production techniques improve to make them cheaper.

☆

ARMY AMATEURS

A recent issue of "Army," the Army newspaper, carried an article on official Army Amateur Stations, i.e. those authorised by the Army using Army equipment operating in various parts of Australia and in overseas theatres. A total of ten were nominated, being VKs 3UW, 3UF, 3AHP, 3AAS, 2AIF, 2ZYC, 4CS, 2FV, 1RM and 6QJ. In addition to these ten official stations, there are, of course, many Army operators using their own equipment scattered throughout the Commonwealth.

It is always pleasing to note when a Government Service sees fit to promote the art and make available equipment for the pursuance of a hobby which knows no bounds.

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The Fatal Current

C. O. BRAINARD, WAOJBU

STRANGE as it may seem, most fatal electric shocks happen to people who should know better. Here are some electro-medical facts that should make you think twice before taking the last chance.

IT'S THE CURRENT THAT KILLS

Offhand, it would seem that a shock of 10,000 volts would be more deadly than 100 volts. But this is not so. Individuals have been electrocuted by appliances using ordinary house currents of 110 volts and by electrical apparatus in industry using as little as 42 volts direct current. The real measure of a shock's intensity lies in the amount of current forced through the body, and not the voltage. Any electrical device used on house wiring can, under certain conditions, transmit a fatal current.

While any amount of current over 10 Ma. is capable of producing painful to severe shock, curents between 100 and 200 Ma. are absolutely lethal. There is no known medical procedure that will revive the victim.

Currents above 200 Ma., while producing severe burns and unconsciousness, do not usually cause death if the victim is given immediate attention. Resuscitation, consisting of artificial respiration, will usually revive the victim.

From a practical viewpoint, after a person is knocked out by an electric shock, it is impossible to tell how much current has passed through the vital organs of his body. Artificial respiration must be applied immediately if breathing has stopped.

THE PHYSIOLOGICAL EFFECTS OF ELECTRIC SHOCK

Voltage is not a consideration in the physiological effects of various current densities. Although it takes a voltage to make the current flow, the amount of shock-current will vary, depending on the body resistance between the points of contact.

Shock is relatively more severe as the current rises. At values as low as 30 Ma., breathing becomes laboured, finally ceasing completely even at values below 75 Ma.

As the current approaches 100 Ma., ventricular fibrillation of the heart occurs (an unco-ordinated twitching of the walls of the heart's ventricles). There's no worldly help for the victim.

Above 200 Ma., muscular contractions are so severe that the heart is forcibly clamped during the shock. This clamping protects the heart from going into ventricular fibrillation, and the victim's chances for survival are good.

DANGER—LOW VOLTAGE

It is common knowledge that the victims of high-voltage shock usually respond to artificial respiration more readily than the victims of low-voltage shock. The reason may be the merciful clamping of the heart, due to the high current densities associated with high voltages. However, lest these details be misinterpreted, the only reasonable conclusion that can be drawn is that 75 volts are just as lethal as 750 volts.

The actual resistance of the body varies, depending upon the points of contact and the skin condition (moist or dry). Between the ears, for example, the internal resistance (less than skin resistance) is only 100 ohms, while from hand to foot it is closer to 500 ohms. The skin resistance may vary from 1000 ohms for wet skin to more than 500,000 ohms for dry skin.

GENERAL SAFETY PRECAUTIONS FOR YOU

When working around electrical equipment, move slowly. Make sure your feet are firmly placed for good balance. Don't lunge after falling tools. Kill all power and ground all high voltage points before touching wiring. Make sure that power cannot be accidentally restored. Do not work on ungrounded equipment.

Don't examine live equipment when physically or mentally fatigued. Keep one hand in your pocket while investigating live electrical equipment. Above all, do not touch electrical equipment while standing on metal floors, damp concrete, or other well-grounded surfaces. Do not handle electrical equipment while wearing damp clothing (particularly wet shoes) or while skin surfaces are damp.

Remember, the more you know about electrical equipment, the more heedless you're apt to become. Don't take unnecessary risk.

WHAT TO DO FOR VICTIMS

Cut voltage and/or remove victim from contact as quickly as possible, but without endangering your own safety. Use a length of dry wood, rope, blanket, etc., to pry or pull the victim loose. Don't waste valuable time looking for the power switch. The resistance of the victim's contact decreases with time. The fatal 100 to 200 Ma. level may be reached if action is delayed.

If the victim is unconscious and has stopped breathing, start artificial respiration at once. Do not stop resuscitation until medical authority pronounces the victim beyond help. It may take as long as eight hours to revive the patient. There may be no pulse, and a condition similar to rigor mortis may be present; however, these are manifestations of shock and are not an indication that the victim has died.

9th Brunswick Scout Troop, Donald Street, Brunswick (Vic.) during the Jamboree-on-the-Air on 16th and 17th October. Left to right: Alan Weshwood, Jan Sardi, Jeffrey Patterson, Brian Patterson, Michael McDonald, David Pellew. Front: Dawn Westwood (L.C.M.) and George Robertson (VK3WJ).

* Reprinted from "QST," Sept. 1965.

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ACV—6, 12, 120, 300, 1,200, 3,000 at 4K o.p.v.
DC mA.—0.3, 3, 30, 300.
DC Amps.—3, 12.
AC Amps.—3, 12.
OHMS—10K, 100K, 1 meg., 10 meg.
DB—Minus 10 to plus 17.
Minus 0 to plus 23.
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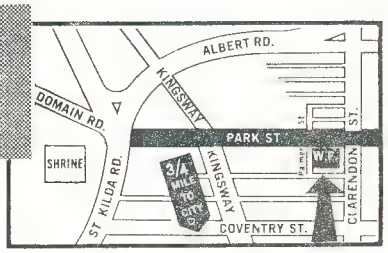

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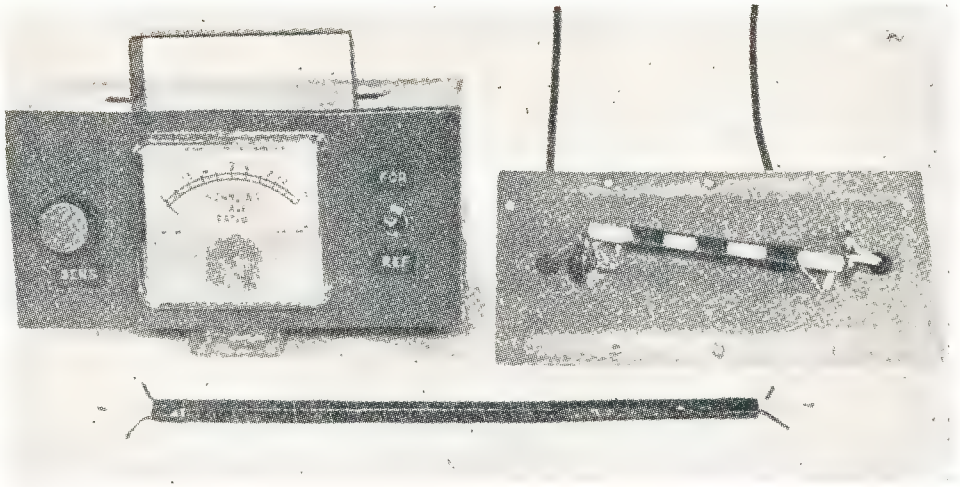


THOSE who are fortunate in having a subscription to "QST" will realise that I have based this article on a recent one of theirs. However, having recently constructed both models for use at work, with excellent results, I have jotted down my findings and construction details for readers.

It is most desirable that the final amplifier of every transmitter should be terminated in a purely resistive load. If any appreciable reactance is present in this load, transmitter efficiency will suffer. A direct indication of the load's reactance and resistance content is given by the standing wave ratio on the line feeding the load, i.e. the co-ax, ribbon or open wire line immediately following the transmitter.

As the majority of Amateur transmitters in current use have co-axial output, the Monimatch reflectometer has come into wide use as a matching indicator. Nearly all Monimatches, commercial and home-made, built to date, are of Mark II. variety and have two inherent disadvantages. Firstly, the meter used needs to have high sensitivity in the order of 100 micro-amps. to be of any practical use, and, secondly, the pick-up unit or reflectometer itself is difficult to construct and fiddly to adjust.

Both the Mark III. and Mark IV. use a 1 mA. meter, and their pick-up units can be assembled in a few minutes, with no adjustment necessary if reasonable care has been taken.

In addition, the sensitivity of both units is better than older models—the simpler but less sensitive Mark III. required at 40 Mc. an output power of 0.3 watts to obtain full scale meter deflection on the forward power reading. If a 100 micro-amp. meter had been used, 3 mW. would have sufficed to obtain a maximum reading. The Mark IV. required only 4 watts output at 3.5 Mc., whereas at 14 Mc. it would handle 80 watts—a larger pot would enable greater power to be handled. Thus the Mark IV. has several times the sensitivity of the older Mark II. r.f. power meters (calibrated dummy loads were used here for the above tests.)

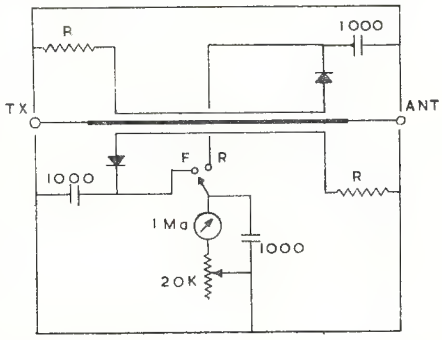
It is essential that the diodes be matched and are available in matched pairs. Alternatively, a suitable pair could be had by placing several diodes of the same type, one by one, in a simple r.f. absorption circuit. Two diodes, giving the same meter reading at several scale points, would be matched. Both circuits and their operation are identical to the Mark II.

CONSTRUCTION

Apart from the cabinet (approx. 5" x 3" x 3", 16 gauge aluminium—depends on component sizes), the whole job can be completed in under two hours.

The pick-up units are made by stripping the sheath and braid from RG8/U co-ax and binding, with p.v.c. tape, the pick-up wires on either side of the bared co-ax. It is important that these wires are snug against the side of the co-ax. The Mark IV. unit is taped for its whole length, whereas the Mark III. is taped at each end and in the middle.

The co-ax unit is then connected between the input and output sockets or three lug terminal strips. Keep the terminating resistor and diode leads as short as possible and endeavour to keep the completed unit symmetrical—attention to this and the snug pick-up wires will ensure a balance of voltages of the forward and reflected power readings.



The Mark IV. pick-up unit can be bent into an "S" for mounting in its box with little effect on performance.

Mark III.:—
Co-ax 4½", 14 gauge wire 3⅜".
Terminating resistors:
For 50 ohm line, 470 ohms.
For 75 ohm line, 430 ohms.

Mark IV.:—
Co-ax 11½", 14 gauge wire 10¾".
Terminating resistors:
For 50 ohm line, 270 ohms.
For 75 ohm line, 220 ohms.

If desired, the meter, pot and switch can be built into a separate box and coupled to the reflectometer box by a plug, lead and socket. This could be desirable if there were several tx/ant. set-ups in the station. Another variation would be the use of the reflectometer box with pot and switch only, used with an external multimeter—what could be cheaper?

CALIBRATION AND TESTING

The meter is calibrated by the following formula:

$$SWR = \frac{F + R}{F - R}$$

where F is the scale reading of forward power.
R the reflected power.

Example: If the forward reading is 1 mA. and the reflected 0.5 mA., SWR = (10 + 5) ÷ (10 — 5) or 3 : 1. If reflected power is 0, SWR is 1 : 1, if it is 1 mA. (i.e., same as forward) SWR is infinity to 1. The meter can be re-calibrated by carefully scraping off the old markings with a sharp knife, and marking appropriate SWR points in Indian ink.

To check that the device is balanced, connect it into the transmitter line, switch to forward, and adjust the reading for a point near full deflection. Note this reading. Reverse the input and output connections, switch to reflected, and note the reading. If both readings are the same, or close (say ±0.2 mA.), the reflectometer is balanced. If not, one of the pick-up wires will have to be moved away a little from the side of the co-ax, till balance is achieved.

Both units built here required no adjustment. To identify the switch positions, terminate the line in a dummy load—the reflected power will always be lower than the forward power.

When using the indicator resonate the transmitter final, and adjust the forward power reading for full scale deflection. Switch to reflected and read off the SWR. In use, the aerial or tuning unit should be adjusted for maximum forward and minimum reflected power—generally these will tend to coincide. If the transmitter power is adequate, it is advisable to leave full loading till antenna adjustments are completed. Put out just enough power to operate the SWR indicator.

PARTS REQUIRED

1 matched pair of OA81, 1N34 or similar diodes.
1 20K ½w. pot.
3 1,000 pF. disc ceramic capacitors.
2 terminating resistors—should be high stability, non-inductive and at least 5% tolerance.
1 S.p.d.t. switch.
1 0-1 mA. meter.
2 Co-axial sockets or 3-lug tagstrips.

* Reprinted from "Break In," Sept. 1965.

NEW CALL SIGNS

OCTOBER, 1965

VK2QM—R. Stacey, 4 Hanover Avenue, Epping.
VK2BPZ—W. H. R. Treloar, 23/8 Fullerton Street, Woollahra.
VK2BSJ—D. S. Jeanes, "Villa Maria," Ayr Street, Rockdale.
VK2ZDX—D. R. Coutts, Hastings Road, Castle Hill.
VK2ZFO—F. R. Overvliet, 2 Bridge Street, Fassifern.
VK2ZOB—K. E. O'Brien, Station: Haig Street, West Cowra; Postal: 338 Illawarra Road, Marrickville.
VK3EZ—T. Mitchell, 91 Roslyn Street, Burwood.
VK3NV—S. B. Backhouse, 35 Moore Street, South Caulfield.
VK3VA—G. P. Winters, 23 Robyn Drive, Nunawading.
VK3AAV—N. W. Deague, 26 Somers Avenue, Malvern.
VK3ABQ—J. A. Moran, R.R.I.S., No. 1, Aircraft Depot, R.A.A.F., Laverton.
VK3ACO—St. Anne's Science Club, St. Anne's Church of England Girls' Grammar School, 8 Raymond Street, Sale.
VK3ACQ—Scotch College Radio Club, Scotch College, Glenferrie Road, Hawthorn.
VK3AEL—A. W. Holt, 39 Loongana Ave., Glenroy.
VK3AGU—Harrison Chapman, The Vicarage, Flinders, Victoria.
VK3AMR—J. A. Howie, Salisbury Ave., Warburton.
VK3AOK—A. D. Swinton, 760 Waverley Road, Glen Waverley.
VK3APT—P. T. C. Morrison, C/o Forests Commission, Mt. Taylor.
VK3AQT—F. Williams, 30 Powlett Street, East Melbourne.
VK3ASH—M. L. W. Park, 74 Rosemont Avenue, Caulfield.
VK3ASP—D. H. Murray, 9 Ruyton Street, Burwood.
VK3AWQ—Warrnambool Technical College Radio Club, Grafton Road, Warrnambool.
VK3ZQC—B. J. Lakey, 118 Panton Street, Golden Square, Bendigo.
VK3ZRZ—A. C. Ryan, 4 Adamson Street, Braybrook.
VK3ZSF—K. F. Dixon, 3 Empire Street, East Preston.
VK3ZSG—I. R. Goding, 15 Yarrabee Court, Mt. Waverley.
VK3ZSL—A. L. M. MacLean, 157 Charman Road, Mentone.
VK3ZTM—R. L. Waite, 48 Seymour Road, Elsternwick.
VK3ZVK—N. Hull, 73 Bayswater Road, Croydon.
VK3ZYL—Gertrude Williams, 30 Powlett Street, East Melbourne.
VK4YH—I. H. Young, 100 Glenholm Street, Mitchelton.
VK4ZDW—W. Dalgleish, 25 Crawford Street, Redcliffe.
VK4ZFC—F. W. Chapman, 17 Shaftesbury Street, Ekibin.
VK4ZHH—E. B. Hall, 10 Kenilworth Street, Sherwood.
VK4ZQT—Teachers' College Radio Club, Victoria Park Road, Kelvin Grove.
VK5FD—A. M. Dunn, 208 Woodford Road, Elizabeth North.
VK5XO—J. B. Lewis, Caroline Road, Square Mile.
VK5ZIM—S. J. Mahony, 19 Kentish Road, Elizabeth Downs.
VK5ZKJ—B. F. Brockhouse, 156 First Avenue, Royston Park.
VK5ZMR M. W. Reiger, 50 Cromer Parade, Millswood.
VK5ZRD—D. R. Gordon, 24 Seventh Avenue, Cheltenham.
VK5ZRJ—G. R. Johns, 25 Wallace Street, Balaklava.
VK6JM—W. J. Mordue, 6 Shearer Street, Myaree.
VK6NN—D. Ross, 46 Norma Road, Alfred Cove.
VK6OM—D. A. Hancock, Flat 7, 198 Labouchere Road, South Perth.
VK6ZAK—W. P. Kent, 16 Rowley Street, Bridgetown.
VK6ZAN—E. G. Smith, School Quarters, Walkaway.
VK6ZDC—P. J. Beacher, 61 Egan Street, Kalgoorlie.
VK6ZFO—J. O. Sullivan, 4 Anthony Street, Palmyra.
VK6ZFJ—L. Janes, R.A.A.F. Base, Pearce.
VK7MB—A. C. McBurnie, 29 Benjafield Terrace, Mount Stuart.
VK7ZMD—D. R. Marsland, 16 Nimrim Street, Montagu Bay.
VK9RJ—R. J. Wirth, Station: 4 Eleventh St., Lae; Postal: C/o Box 251, P.O., Lae.
VK9ZRA—R. H. Ashley, Christmas Island, Indian Ocean.
VK8AV—J. B. Masters, 44 Eden Street, Stuart Park, Darwin.
VK8ZMR—M. D'a. Richardson, 18 Mary Street, Stuart Park, Darwin.

NOVEMBER, 1965

VK1YG—G. Yanow, 23 Carrington Street, Deakin.
VK1AEP—A. E. Peppercorn, 44 James Street, Curtin.
VK1ZCG—G. J. Cashion, 63 Higginbotham Street, Watson.
VK2NB—W. J. Guthrie, Lot 1, Dalton Road, St. Ives.
VK2UK—E. Klein, Postal: P.O. Box 168, Liverpool; Station: 14 Yarangobilly Street, Mt. Pritchard.
VK2ALK—W. J. Lark, 9 Cosimo Street, Old Toongabbie.
VK2ANZ—C. S. Smith, 40 Wyuna Road, Pymble.
VK2APF—Merrylands Amateur Radio Club, 81 Hanbury Street, Merrylands West.
VK2BCT—Camp Technology Amateur Radio Club, Station: Mt. Victoria; Postal: 16 St. Aidan's Avenue, Dundas.
VK2BJP—J. Pernu, 11 Milton Avenue, Mosman.
VK2ZEQ—J. E. Clark, 20 Darling Street, Chatswood.
VK2ZFT—E. G. Gibbons, 135 (Lot 4) Bulli Road, Wentworthville.
VK2ZGK—W. F. F. H. Schroeder, Marshall Street, Dora Creek.
VK2ZKK—K. J. Callaghan, Flat 2, 39 Coolah Street, Griffith.
VK2ZKR—K. R. Brackenbury, 18 Perkins Street, West Ryde.
VK2ZYX—R. B. Broad, 3/7 Bogota Road, Cremorne.
VK3ABZ—J. Bedford, O.T.C. Wireless Station, Fiskville, via Ballan, Victoria.
VK3ZQX—D. I. Sillett, 9 Larbert Street, Noble Park.
VK4FR—F. J. Miller, 43 Gordon Street, Stones Corner.
VK4ZMP—M. P. Moody, 77 Bayview Terrace, Clayfield.
VK6DK—R. Kilworth, 2 Johnston Street, Carnarvon.
VK6FJ—M. J. Fisher, 23 Searle Road, Applecross.
VK6JT—J. P. Talbott, C/o Tracking Station, Carnarvon.
VK6PA—J. W. Talbott, C/o Tracking Station, Carnarvon.
VK7RG—R. L. Gunther, 76 View Street, Sandy Bay.
VK0AH—A. E. Humphreys, Wilkes.
VK0KM—K. C. Martin, Mawson.
VK0MI—C. R. Lebbon, Macquarie Island.

ERRATA—PYE REPORTER

Errors in Circuit Diagram, "A.R.," Nov., '65, page 4 and sheet distributed by Victorian Division.

John Haseldine, VK5JC

1. Cathode bypass (25 uF. 25v. electrolytic) of V8 (6AV6) omitted.

2. 0.1 uF. and 47 ohm (in parallel) below and between V8 and mic. transformer: as drawn, this shorts out the negative supply by earthing same. The capacitor value should be 0.01 uF. The negative line from the power supply should connect to the junction of the 47k, 47 ohm and 0.01 uF. The 47 ohm and 0.01 uF. return to earth. Note: The negative supply is the voltage drop across this 47 ohm and the 39 ohm in the power supply—said resistors being in parallel.

3. The suppressor grid of V9 (audio output and modulator) is internally connected to the cathode. It is shown wrongly as an external connection.

4. A wire wound resistor (1.5k 5w.) has been omitted between the "break" contact of the "B" changeover group (Rel. 1) and the 47k anode load of V8.

5. P.A. anode metering. A 2 uF. capacitor is incorrectly shown across the 10 ohm resistor which is in series with a 3k resistor. Starting at the "B" contacts on the relay, the order that the components should be shown on the circuit are as follows: the 10 ohm resistor in series with the 3k resistor to the winding on T7, the 2 uF. capacitor is in parallel with the 3k. The meter leads are: H.T. to pin 7 on SK1 and the junction of the 10 ohm and 3k resistors to pin 5 on SK1.

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AN APPRECIATION

AUSTRALIAN BOY SCOUTS ASSOCIATION

2nd December, 1965.

Australian President of the Wireless Institute of Australia,
Mr. G. M. Hull,
22 Dryden Street,
Canterbury, E.7.

Dear Mr. Hull,

I am writing on behalf of the Australian Boy Scouts Association to convey our thanks to the Wireless Institute of Australia for the splendid help and co-operation which its members gave to the Boy Scouts Association in all parts of Australia during the function known as the 8th Jamboree-on-the-Air.

We have received reports from all parts of Australia which indicated the great success of the function and the enthusiasm that it was received by the many Scouts and Girl Guides who took part.

At the present time we are not in a position to report exactly how many took part in the Jamboree-on-the-Air but we do know that it was a record and that even greater enthusiasm than that shown previously attended this year's function.

The Jamboree is only made possible because of the great interest and assistance of your members and we would be pleased if by some means you could convey to them this expression of our thanks on behalf of the whole association.

We look forward to continued co-operation in the years that are to come and would like you to know that in the Scout Movement there is a growing enthusiasm for this event.

With best wishes to your Institute and the good work that it is doing.

Yours sincerely,

E. M. Derrick, National Secretary.

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12th February to 13th February

A. R. R. L.

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"QST"

Trade Review

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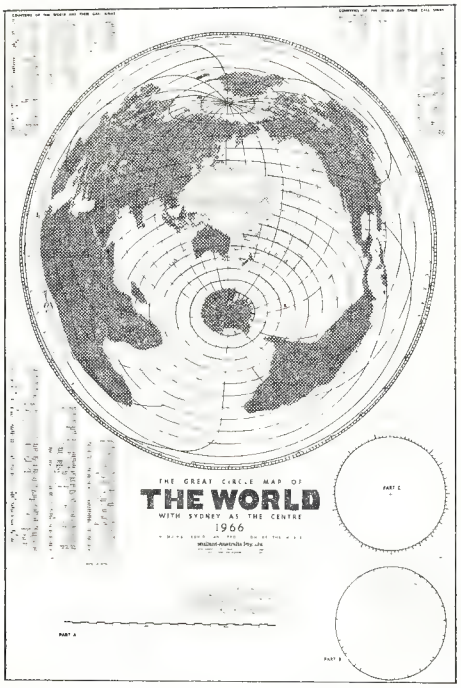
The countries are marked with their prefixes, and major cities are pinpointed.



There is a cut-out scale, in English miles, which, by locating at a marked pivot point, can be used to measure mileage to any part of the world.

Over 300 countries are listed, with prefixes, on three corners of the chart.

The fourth corner is used for a world time calculator, using a cut-out disc.

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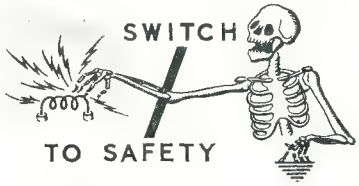

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

DUTY ON AMATEUR EQUIPMENT

Editor "A.R.," Dear Sir,

I agree resoundingly with Mr. Bles in his conclusions reached in this column (January issue), but would point out that I am well and truly familiar with preferential Commonwealth import duty rates, and so is the Customs Office in Hobart, from whom I obtained the information published here. I merely did the various calculations including the prescribed rate of sales tax as applicable. It is a silly point, and far more important is the problem of the crushing customs duties which are imposed on Amateur equipment brought to Australia. The issue is certainly not solely that of protecting Australian industry; perhaps it is simply a matter of a lucrative and reliable source of income for the government? In that event, we should not hold our breaths until reasonable duties are imposed on non-competitive equipment.

—R. L. Gunther.

T.V. CLUB

9 Rothwell Tce., North Glenelg,
South Australia.

Editor "A.R.," Dear Sir,

At the time of writing this letter there are 28 members of the British Amateur Television Club in Australia and New Zealand, six in ZL, eight in VK2, two in VK3, five in VK4, four in VK6, two in VK7, and one at present in VK5 though several applications for membership in S.A. will be forthcoming in the near future.

As the editor of "Amateur Radio" is a complimentary member, I thought of approaching you to find out if there was sufficient interest among our far-flung T.V. Hams in Australasia to form a sub-group affiliated with the club, so as to facilitate interchange of technical ideas and also to buy major components from the parent organisation.

For those who may be interested in joining, the club, although British by name, is international with about one-third of its nearly 1000 members living outside the United Kingdom in a large number of countries including America. It publishes a quarterly magazine, "CQ-TV," which is free to members. Direct membership costs $1.25 or 12/6 Australian (10/- sterling), though subscriptions through a locally organised branch would be probably slightly more in order to defray the postage costs involved.

This suggestion is partly my own idea, and partly that of an officer of the club, and it would be in our interest if we felt such a scheme likely to succeed that it be forwarded to London as soon as possible for approval by the committee.

I have sent a copy of this letter to the Club Secretary.

For anyone interested in joining, I hold some membership application forms.

—C. R. W. (Dick) Ashton.

☆

CONTEST CALENDAR

12th/13th February. — John Moyle Memorial National Field Day Contest (Rules Dec. "A.R.").

19th/20th February. — R.S.G.B. 1.8 Mcs. Contest.

19th/20th March. — B.E.R.U., 1966 (Rules "R.S.G.B. Bulletin," Sept., 1965).

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Equipment and Components

GALAXY or SWAN, what set to buy if you want to go all-band s.s.b. with commercial equipment?

The answer is not difficult. If you only plan to contact your friends **on** your own frequency and little else, let the more attractive appearance of the SWAN's decide. But . . . if you want more versatility, work dx **off** your own frequency or follow a drifting station with an external v.f.o., check sideband suppression for your friends or the other sideband of an a.m. station, the GALAXY offers more at a saving. Including sideband selection as standard equipment, adding an internally plugged-in crystal calibrator and VOX unit, and an external v.f.o., will cost $160.0, less with a Galaxy V than in the case of a Swan 350 Mark III. What is more, you should be able to construct a satisfactory single-range external v.f.o. yourself, a near impossibility with a Swan 350 as it must perk on 9, 12, 16 and 23 Mcs.! Also, you do not need a v.f.o. adaptor for a Galaxy and sideband selectors and calibrators are not kits of components to be wired in.

Anyway, both makes are excellent transceivers, the cheapest all-band s.s.b. sets on the market and they still cost $600, including a heavy-duty 240 v. a.c. supply/speaker combination in matching cabinet. The a.c. supplies use a separate transformer for the 800 v. supply where loads vary up to 200 watts on peaks, the only way to maintain maximum regulation for proper linear operation.

For **mobile** operation an AZTEC or GALAXY 12 v. d.c. supply, **fully** imported, will cost $90 or $110, the **all-band** WEBSTER mobile antenna, including bumper or body mounting assembly is $48. Just one mobile antenna, tuneable to **any** frequency between 3.6 and 30 Mcs.

To work dx you need a little more than a G5RV as antenna and HY-GAIN offers many possibilities: 10/15/20/40 meters vertical 14AVQ, $44. 10/15/20/40/80 meters vertical 18AVQ, $70 (must be guyed—32 ft. tall). Yagi beams, 10/15/20 meters junior TH3JR, $96. 10/15/20 meters TH3Mk.2 "Thunderbird", $140. Other models on special order. Two 14AVQ verticals make an excellent 4-band dipole as a basis for a super Yagi beam!

ROTATORS for Yagi beams. For junior models, the ALLIANCE U-98 is adequate, $55, for average size beams use a C-D TR-44, $100, the C-D HAM-M will carry maximum loads, costing $170.

For the man who wants to or needs to roll his own, there are still plug-in crystal filters, vernier dials and vernier assemblies, 50 mmfd. air condensers, gangable with extension shafts, co-ax. connectors and switches. 7000-7100, 8000-8100 and 8995-9000 Kcs., FT 243 crystals, $1.50.

AUTRONIC transistorised automatic keyers, with built-in monitor and power supply, no relays, $70.

Used COLLINS KWM-2, in excellent condition, with Collins PM-2 110/220 v. a.c. supply-speaker unit and stable home-made external v.f.o., $1000.

	SWAN		GALAXY	
5-band Transceiver with 240 v. a.c. supply/speaker	$600	SW 350 M-III	$600	model V
USB-LSB Sideband Selection	25	kit		included
Crystal Calibrator	25	kit	10	
Full-range external v.f.o.	160	model 420	90	
V.f.o. adaptor	40	model 22		not needed
VOX	45		35	
	$895		$735	

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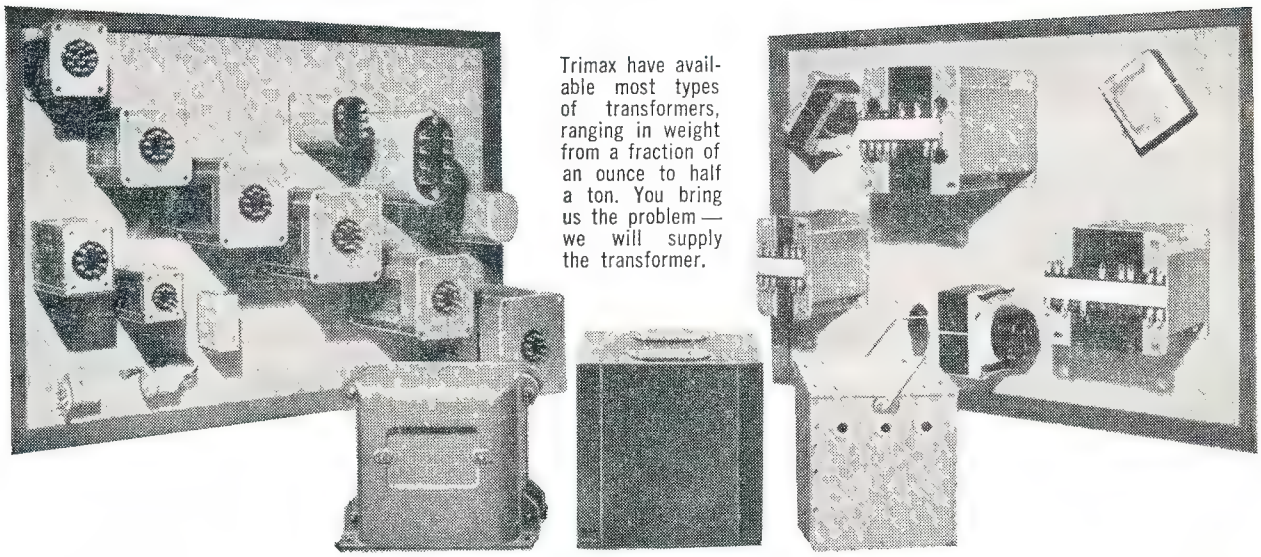

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LM 51

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

S.S.B. TRANSCEIVERS (Continued)

Apart from American transceivers the most notable is the British KW-2000 which has features to satisfy the British user. It has 90w. p.e.p. rating with a single 6146 output stage, being sufficient to drive a linear amplifier to the full 600w. peak input permitted by English regulations. Most U.S. transceivers need at least twice this to drive larger linear amplifiers to their U.S. legal limit, which accounts for the higher general input level of 200w. or more for most of the previously mentioned units.

Inclusion of the 160 mx band was essential for British operating conditions, with a 40w. peak input power restriction for s.s.b. transmission. While on the subject of the 160 mx band, I must ask why more VK sideband operators do not use this band. I have heard of only two others, VK2AVA and VK3BM besides myself who have used the band with our full 150 watts. Anybody with the usual 9 Mc. sideband generator and 5.0 to 5.5 Mc. v.f.o. can get on 160 mx merely by doubling the v.f.o. to 10.8 Mc. and subtracting 8 Mc.—the mixer will do all the doubling you need, without your help and the only thing left for the operator is to put the class A and AB1 (and linear) tuned circuits on 1.8 Mc. An 80 mx or G5RV antenna will load up beautifully against ground (use the back yard water pipes) and you are there. Contacts with U.S.A. may be somewhat more difficult now that W6VSS is no longer active, but ZLs are quite easy to contact.

But to get back to the KW-2000 series made by Roley Shears, G8KW. Those who have them are full of praise for the unit. The price comes out a little high when purchased in Australia, but if you can get one brought back by a friend or relative—complete with "d.c." power pack, even the "gift" duty does not make the cost unreasonable. This KW-2000, with its linear, is recently being advertised as the "G-line". Its sideband is obtained from a mechanical filter and it has all of the modern features such as a.l.c.

The Australian production of an s.s.b. transceiver in N.S.W. has not materialised, as far as I am aware, and I say this because I do not know. I have heard several of these units on the air, but it would seem that small scale local production cannot match the U.S. high volume production. The publicity I have seen and the signals heard from this Wagner unit seemed to indicate that the unit was first class and the two v.f.o's included as standard was an excellent idea for the Australian Amateur. The s.s.b. transceiver under construction at VK5NN will include this idea for which I thank Messrs. Wagners.

Hallicrafters have recently brought another tri-band transceiver, the SR-500, on to the market. It will take a peak input power of 500 watts with 12 db. of a.l.c., making this the highest-powered self contained unit available.

Units most commonly available to the Australian Amateur for purchase in this country are those made by Collins, Hallicrafters, Swan and Galaxy. Heathkit and Eico kit sets are available with quite a saving in monetary outlay

It is unfortunate that the Heathkit, Sideband Engineers and Transcom units will not tune the Australian frequency assignments in the 80, 40 and 20 mx bands. So some frequency shifting and dial re-calibration will be necessary before use in this country.

There is no doubt that the transceiver is becoming the most popular piece of equipment for operating mobile when on long journeys or even just travelling to work, and also for those who like to operate in comfort and warmth from the living room instead of a cold and noisy shack.

The transistorised units mostly finish up with three or four valves in the r.f. output section, e.g. last mixer, class A stage, and output class AB1 stage. Those I have operated are excellent performers in the receiving mode, with negligible battery drain.

Before leaving the commercial scene, I must mention one more manufacturer of "separates" which may be made to transceive, viz. Davco. This is a new firm which advertises its DR-30 fully transistorised receiver and companion DT-20 transmitter which is yet to be seen and is still coming. The interesting thing about these units is their weight and size, the receiver weighing 9 lbs. and is 7 x 6 x 9 inches, and the transmitter 7 x 9 x 11 inches.

The home construction of s.s.b. transceivers is not an impossible task and the writer has a transistorised version with a 9 Mc. crystal filter under construction. The availability of cheap n.p.n. silicon transistors with adequate high frequency characteristics makes this a completely practical proposition. Transistorised v.f.o's even in valve type equipment has enabled single mixing to the final frequency from say 5 or 9 Mc. s.s.b. generators. The temperature drift problem with valves is not present to the same extent.

The manufacture of good six-crystal h.f. filters complete with carrier crystals will assist the home constructor, as this is one of the most difficult items to be "found". I am prodding an Australian crystal manufacturer to get his prototype filter fixed up ready for production. The six-crystal job is better for reception than the four-crystal filters which are commonly used for transmission. The side-lob "pop-ups" can be troublesome for receiving. I'm sure we all wish this filter manufacturer the best of Amateur luck with this project.

More detailed data may be obtained from equipment reviews in "QST," "CQ," "73," and R.S.G.B. magazines. Perusal of these and the advertisements will help with the selection of your gear.

Because of the small quantities of imported gear sold in Australia, no importer is going to grow fat on the profits made from Amateur s.s.b. sales. The field is competitive and everybody sees the overseas prices in the magazines.

For those whose age or health preclude them from construction of complicated gear, the purchase of an s.s.b. transceiver will provide a new "lease-of-life" and endless enjoyment of contacts which are just so easy using s.s.b.

In future issues it is hoped to be able to discuss the companion linear amplifiers which are available, as well as s.s.b. transceivers and transverters for the v.h.f. bands.

73 for now, Phil VK5NN.

☆

GATEWAY OF INDIA AWARD

The Gateway of India Award is sponsored by the Amateur Radio Society of India, Western Zone, in memory of the late Rev. R. Conesa, S.J. (VU2SX), the founder and first secretary of the Western Zone. This attractive certificate is available to all licensed Amateurs of the world and may be claimed by working the following:

(a) Applicants in Asia to work ten Amateurs in the Western Zone.

(b) Applicants in the rest of the world to work five Amateurs in the Western Zone.

All contacts must have been made on or after November 9, 1957, the day on which the Western Zone was found. There are no band or mode restrictions and there are no endorsements.

The Western Zone comprises the States of Maharashtra, Gujarat and Kerala, and the Laccadive Islands. Contacts with Amateurs who have moved out of, or were temporarily in, the Western Zone are also valid for this award, provided their QTHs are clearly indicated on the QSL cards.

QSLs are NOT required. Send certified list signed by another Amateur or by a club official, together with six I.R.C's (for DX Amateurs) to the Awards Manager, Dady S. Major, VU2MD, Petit Mansion, 85 Sleater Rd., Bombay 7, India.

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SWAN NEWS!

SWAN SW350 Mk. 1, Mk. 2, ??????

As the SWAN DISTRIBUTOR for Australia we are finding this crop of Mk.'s quite confusing, especially as the latest Mk. III as listed by a retailer is quite unknown even to the Swan Electronics Corporation themselves.

To clarify this matter the history of development is as follows:—

The original SW350 encountered slight drift troubles in SOME UNITS only, also some click trouble was evident on c.w. No dial set trimmer was fitted and only partial coverage of the 10 metre band was available.

The SWAN Corp. in their continued programme of improvement have fitted ceramic formers and improved temperature control in the v.f.o., this modification overcame the drift. They then fitted a new dial and added full coverage on 10 metres, they also fitted a dial set trimmer on the front panel as standard and anti-click circuitry.

To differentiate between this model and the earlier model this company added the Mk. II to the model number.

Since these changes a different crystal filter of module form has been fitted. As no difference in operation is evidenced no further Mk. number has been used for this model which is still known in Australia as the SW350 Mk. II.

As can be seen from the above the SWAN Corporation are continually developing their equipment to give the Amateur the finest equipment available regardless of cost.

You just can't go wrong with the SWAN SW350 or SW400 Transceivers and accessories.

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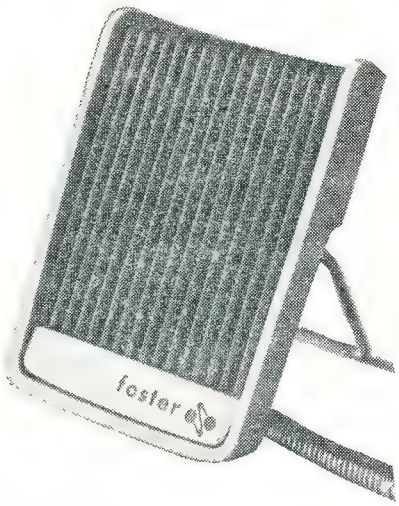

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FOR HAND-DESK USE

SPECIFICATIONS:

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Effective output level .... —55 db. [0 db. = (one) 1V. Microbar]
Frequency response .... 200 to 10,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

SIZE: 3" x 2-1/8" x 1".
Cable: 12 ft. of P.V.C.
Switch: on-off.
Desk Stand. Clip folds for hand use.
Colour: WHITE.
Plastic Diaphragm.

Retail Price
50K ohms
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DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld.

Firstly, a word or two on that perennial question. The state of the bands?

21 and 28 Mc. after showing signs of promise, have like the gentler sex, turned coquettish and withdrawn their enticements. The bands are at present down on last month's form.

20 mx is now far and away the "top of the five." Good DX and opening during the night hours. South Africa and Europe after 1100z.

For 7 Mc. the ionosphere is not being very indulgent. The S.R. to Europe from 1800z is a chancy business indeed. QRM from Asian commercials on this dog-watch is colossal. A check on the first 20 Kcs. of 40 mx at 1900z on 9/12/65 showed very approx. 18 stations other than Amateur. This makes the band at this time of early morning almost useless for DX.

NOTES AND NEWS

Easter Island: CE0AC appears around 0400z on odd days. 14 c.w.

Ruanda: Gene, 9X5PS worked 14,080 Kcs. 2000z. Says QSL direct to P.O. Box 636, Kigali, Ruanda.

Mauritius: Raoul VK8AI on regularly and easy to QSO. Try 14 c.w. after 1300z.

Gough Is.: ZD9BE said to be working 20 c.w. Try around 1700z.

Nauru: Lloyd W6KG using the prefix KG6SZ/VK9 should be very active from here by the time this reaches you. QSL YASME Foundation.

Laccadive Is.: VU2NR and VU2AK are making plans to activate this rare spot. More information if the project comes to realisation.

Svalbard: LA4FG is said to be on 14,040 Kcs. at 1600z.

Malagasy Rep.: 5R8AM on 14,065 at 1830z—also one or two others active.

Ethiopia: 9F3USA on quite often around 14,060 after 1100z. QSL W7TDK.

Kuwait: 9K2AN, 14,050 at 1330z.

North Borneo: 9M6CL a regular on 14 Mcs. after 1000z. Says QSL via buro.

Ellice Is.: VR1S active from Fanafuti. 0700z, 14,040 might find him.

Syria: YK1AA reported QRV 1300z. 14,220 s.s.b. SAE and IRC to Call Book QTH.

Dahomey Republic: Jack, TY3ATB is said to be active on 21,400 s.s.b. at 1300z.

Spanish Morocco: EA9AZ seems to be authentic. Try 21,360 daily at 1630z.

Tahiti: Bob, F08BI will be QRT sometime late March or early April. Bob will work all bands actively till then. Mode A1 and QSL to F2HM.

Port Timor: CR8AF and CR8AE both QRV almost nightly. 14,080 Kcs. at 1200z or later. QSL to Dilli, Port Timor.

Honiara: VR4CR is said to be still active. A.m./c.w. mostly 14 Mcs. QSL to Weather Officer.

Ceylon: Ian 4S7IW and Denver 4S7DA are both very active. The former 14,220 s.s.b. at 1200z and the latter on 7 and 14 Mcs. c.w. from 1300z.

Swaziland: ZD5R, 14,118 at 1300z. QSL VE4OX. Also reported here in VK on 21 Mcs.

Djibouti: FL8MC on nightly and FL8RA spasmodically. Both A1 mode around 14,070 after 1300z.

Cozumel Is.: Lou, W6EYB will be on again from this spot off the Mexican coast probably February. Call will be XE5. Freq. 21,410 and higher. Good for WPX only.

Kerguelin: New. ops. are now at FB8XX. Names Eric and Peter, s.s.b. men but use c.w. also. Already they have been heard on several frequencies on 20. QSL to 5R8BC.

Sudan: ST2BSS on 14,280, 1645z. QSL to J. Collins, USAID, American Embassy, Khartoum. Next stop is **Mali Rep.**

Crozet: Also has a new op., Jean Pierre, 1630z at 14,120. Call is FB8WW.

Falklands: VP8HZ, 14,220 at 0300z.

S. Shetlands: LU1ZC, 14,280 and 14,050 at 2000z. QSL to RCA.

Don Miller, W9WNV, plans expeditions to two virtually unknown (he won't tell yet) spots in Oceania as well as FW8 Wallis and Manihiki. He is now flat out from ZK2 but will have departed to fields anew by the time this reaches you. Keep listening on 7, 14 or 21 for the pile-up. His signals are usually strong and there never was a better operator.

ACTIVITIES

Ken VK3TL, who quietly picks up the choice ones each month, worked the following on 20 mx: A Quad 80 ft. high is going to put out a "Big Sig." for Ken in the near future. He worked on 20 mx: CO2KG, CR8AE, CX9AAU, FL8AA, FL8MC, HC8JG, K7LMU/HC8E, IT1SAI, KG6IC, KX6SD/EB0N, M1B, MP4BDP, VP1PV, VP1JKR, VP2KD (St. Kitts), VP5RB (Grand Turk), VP9FK, VQ8BFA (Agalega), VS9OC, XW8ZA (Aeromob), YV7AV, YV9AA, ZC4MO, ZD8HL, W9WNV/ZM7, 4U1SU, 5VZ8CM (40 m.), 5H3JR, 5Z4JD, 7Z3AB, 9N1MM, 9G1FR. QSL's received were ZP5KT, 4X4DK, 5A1TW, W5HRW/VP9, YO9CN, ZB2AB, HM5CO, PY2PA, ZP5LS, OD5EG, VP7NY, YV7AY, 7X2GH and more.

Dud VK1MY, who runs 120 w. into a G.P., picked up some nice ones this month on 14 c.w., viz., PY2BJH 0900, VQ8AI 1345, KR8CV 0700, UQ2HQ 0930, CX1RY 1010, 9M2YY 1030, VS9OSC 1222, KX6ZS/E 0730, FL8MC 1325, 9K2AN 1335, HS1CW 1426, 5X5IU 1426, 9F3USA 1500z, FU8AG 2145, YV9AA 0550, CR8AF 1400, YU3TCN 0700.

Chas., VK4UC, before leaving for a Gold Coast vacation logged the following: UF6BD 1300, HB9ADP 1320, IT1AQ 1330, EP2BQ 1240, XW8BD 1400, 9M6CL 1330, 9K2AN 1350. QSL to Box 736, Kuwait. KX6ZS/E 0800, BV1USF 0930, MP4BFK 1300, LZ1KGL 1300, UI8LB 0300, LA1H 0930. QSL to Box 263, Harstead. OZ7X 1100, UC2KUA 1400. QSL's received: PY2CO, TI2PZ, GI3OLJ, 6Y5MJ, KB6CY, KZ5RD, VS9MP, 7Z3AB, CX2AJ, 6O6BW and more.

All the above times are G.M.T.

Graham, VK2AGH, reports now 315 confirmed which is really a stout effort for a comparative newcomer to the game.

Trev, VK2NS, reports having chalked up 150 plus on 40 mx. Another big effort considering the layers of QRM on this band.

More activities reports please.

QSL MANAGERS

VR4RO—G2RO	M1QJ—ON4QJ
YJ8XX—VK2AEY	SU1GM—G3BYM
YJ1MA—W1HGT	SV1AB—W4HUE
YN0KCV—K4KCV	SV0WJ—K4BNI
YS1BD—W0NWX	TA3GVU—W6FB
ZD9SCA—W6YLI	VP1WS—K8ONV
EP2AO—W4UXE	VP2AB—W8VDJ
EP2LD—WA1DEY	VP2DQ—W2LSX
F0AB—ON5DO	VQ8AY—G2RO
FE8AH—5U7AH	KB6CY—W2CTN
FF8CK—6W8CK	LA5CI/P—LA1NG
MP4TBO—VE1AKZ	9M6DH—RSGB
PX1CB—F3CB	OH0VF—OH5VD
FH8CE—W4ECI	VS9AFR—RSGB
KW6DH—W6UWL	VS9MP—W2CTN

SUMMARY

In past years commencing February at this QTH, the LP on 20 mx to Europe which takes in South America and North Africa on the way, usually improves considerably and remains so until late May. Those who find it convenient to operate from 0400 to 0800z should pick up some good ones.

Have you ever paused to consider the size and impact of Amateur Radio in the world today? The Big Fraternity, which was a few short years ago but an infant in swaddling clothes, is somewhere now in the "growing pains" stage with half a million or so of us. Within this huge framework there exists countless clubs and societies or groups in which DX activity plays a big part. Surely, with the right motives this incessant exchange of contacts and ideas must amount to something more than inconsequential in the promotion of good will and understanding. We have the potenial for this right there on the desk in front of us, but sadly we do so little about it.

My thanks again to all those who regularly provide needed information. Also DX Editors LIDXA, Fla DX'er and now with Jim, G3UGT whose bulletin "Airwaves" is now received on an exchange basis. 73, Al VK4SS.

VK0 CALLS — 1966

(Information supplied by VK3IJ of A.N.A.R.E.)

Macquarie Island: VK0MI, Colin Lebbon (c.w., a.m., s.s.b.).

Mawson Base: VK0KM, Keith Martin (s.s.b.).

Wilkes Base: VK0AH, Alan Humphries (s.s.b.).

In all three cases QSL via VK3 Bureau—Eric Trebilcock (L3042).

John Moyle Memorial
NATIONAL FIELD DAY
CONTEST, 1966
12th and 13th February.

Experimental F.M. Station for Victoria

The Postmaster-General's Department has granted a licence to conduct test transmissions in the u.h.f. band using frequency modulation. Technical details are as follows:

Call sign: VM3Y.
Frequency: 554 Mc. plus or minus 0.002%.
Bandwidth: 200 Kc.
M.E.R.P.: 500 watts.
Deviation: Plus or minus 75 Kc. (proposed).
Pre-emphasis: 50 micro-seconds.
Polarisation: Horizontal, cross polarisation envisaged.
Modulation: F.m. monaural and f.m. stereophonic.
Stereo system: F.C.C. (America) pilot tone system.
Transmitter location: The Olinda area of the Dandenong Ranges.

The purpose of the experiment is to investigate the following:—

(a) What are the problems associated with the use of the u.h.f. band for f.m. stereo broadcasting services?
(b) Is the use of elliptical polarisation to fill dead spots in coverage necessary? Will it make reception practical in portable and mobile receivers?
(c) What are the problems associated with stereo and S.C.A. systems when used with u.h.f. transmissions?
(d) What receiver design would be most suitable for u.h.f. stereo transmissions?
(e) To what extent is the public interested in f.m. radio services?

The experiments will not include the transmission of advertising matter, or simulate commercial broadcasting in any form.

It is anticipated that pre-recorded music and speech will form part of the test conditions. It is hoped to commence transmissions shortly.

For people living in the Sydney area, we would advise that a similar experimental station is being set up in Sydney. For further information please contact Mr. Ray Allsop, P.O. Box 3998, G.P.O., Sydney, N.S.W.

As the allocated frequency is in the u.h.f. band, it should be noted that standard f.m. tuners (88-108 Mc.) will not be suitable for reception. A newsletter is available to those who are interested. Information or comments relating to the f.m. scene would be welcomed for possible inclusion in newsletter. Requests should be addressed to F.M., P.O. Box 30, Toorak, Vic.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK5MS	24	320	VK2JZ	61	246
VK3AHO	51	314	VK2ADE	65	231
VK5AB	45	312	VK4HR	12	223
VK6RU	2	310	VK2AAK	58	214
VK6MK	43	307	VK6KW	4	211
VK4FJ	21	283	VK3WL	14	211

New Members:

VK3RV	68	101

Amendment:

VK3TG	48	143

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3KB	10	335	VK2AGH	71	283
VK2QL	5	308	VK2EO	2	279
VK3CX	26	308	VK6RU	18	263
VK4FJ	29	300	VK3AHQ	79	260
VK2ADE	81	298	VK3ARX	66	259
VK3NC	19	286	VK3XB	75	247

Amendment:

VK3RJ	42	236

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK2ADE	28	322	VK2ACX	6	300
VK6RU	8	316	VK3NC	77	287
VK3AHO	76	315	VK3JA	43	271
VK2AGH	83	315	VK4HR	7	264
VK6MK	74	309	VK2VN	18	264
VK4FJ	32	308	VK2APK	82	243

New Members:

VK5LZ	97	115

VK9RO	88	113

F-SERIES S.S.B. EQUIPMENT by Yaesu Musen

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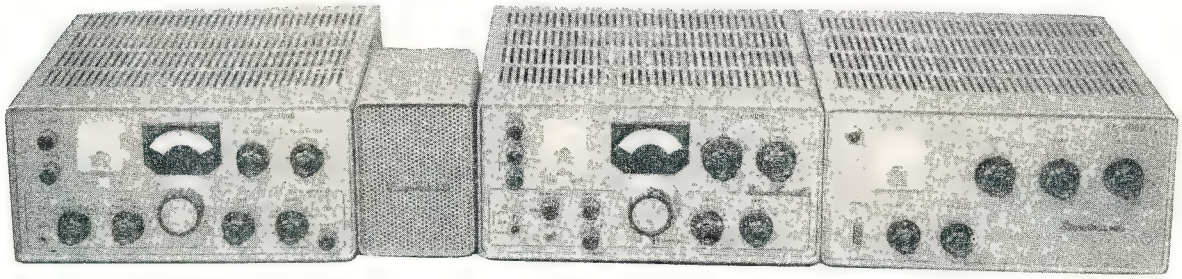

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FL-200B: S.s.b.-a.m.-c.w. transmitter, 240w. p.e.p. input, with two 6JS6 tubes in p.a. running within ratings for longer life! Solidly constructed and neatly wired, with high quality components, ceramic bandswitch, Kokusai M.F., Solid State Power Supply, etc.

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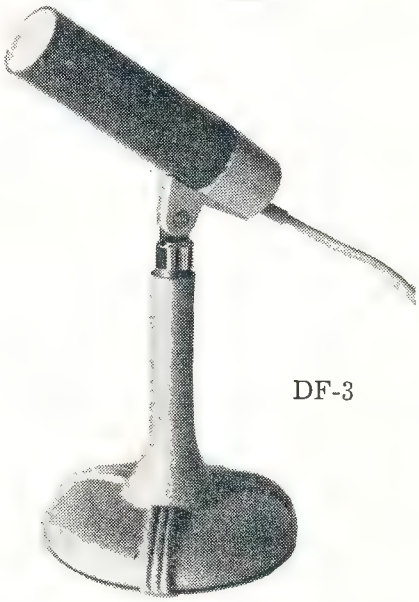

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Effective output level .... —55 db. [0 db. = (one) 1V. Microbar]
Frequency response .... 50 to 15,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm.
Size: 4½" long, 1¼" diameter.
Cable: 12 ft. of P.V.C.
Swivel fits 5/8" 26 t.p.i. Stands.
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Details of two awards issued by the L.P.R.A., Panama, may be had from this Bureau.

VK Hams were pleased to receive a visit from G3SWH, Phil Whitchurch, radio officer on the Himalaya. Phil, a member of F.O.C., hails from Bristol.

Results of the 1965 P.A.C.C. Contest, sponsored by the Netherlands Section of the I.A.R.U. (Veron), disclose no VK stations listed. The 1966 Contest will be staged 12 Z April 23 to 12 Z April 24, 1966. Full details from this Bureau.

From the December issue of the K.A.R.L. News (Korea):— "HL5X and 6N5X are not Ham stations. Sometimes HL5X and 6N5X are operated on Ham bands and work with some foreign Ham stations. HL5X and 6N5X were licensed as experimental radio stations. In Korea, experimental radio stations are licensed on single spot frequencies on each Ham bands and are forbidden to contact with any Ham stations. K.A.R.L. has sent back all QSLs for HL5X and 6N5X as they did illegal operations."

—Ray Jones, VK3RJ, Manager.

— . . . —

NEW SOUTH WALES

CENTRAL COAST BRANCH

The last meeting for 1965 of the Central Coast Branch of the W.I.A. was held on December 17. Lindsay, VK2ON, gave a very interesting talk with excellent slides on his recent trip overseas. He had about nine weeks to see something of Canada, the U.S. and also Great Britain. It is a matter of interest that the fare from New York to Great Britain and return was only £15 as part of his overall ticket, so naturally he took advantage of this and saw relatives and friends in Scotland and England. He met several Hams along the way and had red carpet treatment from them all, even a "come and take pot luck" dinner invitation which turned out to be roast chicken, corn on the cob, fresh apple pie, etc. He literally whetted our appetites for a trip.

The Club held its annual Christmas Party early in December which consisted of a delicious buffet dinner, 807s, etc. Several members joined in a fancy hat contest. The hat was to be based on radio and some very good examples turned up from a realistic c.r.o. to a disc ceramic capacitor. Garry Tibbett, VK2UX, won the men's prize with a hat of flashing lights, and Joy Trewhella, Mrs. 2RF, won the ladies' prize with a mast complete with aerial. There was a blindfold hidden tx hunt for lucky number prizes. Lindsay won the men's prize of a set of chassis punches and Joy Trewhella the ladies' prize of a wall can opener.

Alec, VK2AAK, was appointed Oscar IV, N.S.W. State Co-ordinator, by the University of Melbourne, which is the Federal Co-ordinator for Oscar IV. To date he has spent many hours collecting and dispensing information. There are quite a few N.S.W. Hams interested in this Project and he is finding the 146 Mcs. net very convenient in this regard.

Peter Kerr, of Gosford, recently passed his L.A.O.C.P. and is awaiting his call-sign. Peter was a member of John Deering's class, which was held recently at the School of Arts, Gosford.

Our Field Day on February 27, 1966, at the Gosford Racecourse is fast approaching and we are hoping for quite a number of interstate visitors. Here is a brief sketch of events projected for the day. 9.30 a.m.: Registration and morning tea; 9.30-10.30 a.m.: All-band scramble; 10.45 a.m.: 2 metre pedestrian hunt; 11.30-11.45 a.m.; XYL 2 metre scramble; 12-1.30: Lunch; 1.45-4 p.m.: Choice of boat trip on Brisbane Water or scenic bus trip to Norah Head Lighthouse; 4 p.m.: Afternoon tea; 4.45 p.m.: Prize-giving and farewell.. There will be a rx sensitivity text on 40 m. at sometime during the day. The admission price includes everything. —VK2AXS.

VK2 EASTER CONVENTION

The Canberra Radio Society will once again hold an **Amateur Radio Convention** during the forthcoming **1966 Easter long week-end.** This will follow broadly the pattern that has become popular in recent years with the addition of some extra attractions.

It is hoped to include some or all of the following on the programme:—

Visits to:

- A Deep Space Tracking station.
- The Australian National University High Voltage Lab. to see the Van De Graff Generator.
- The R.A.N. Radio Transmitting Station at Belconnen, most powerful in the southern hemisphere.
- The new Mills Cross radio telescope at Hoskinstown with its two miles of aerials.

Plus: Film shows, lectures, competitions, junk sale, fox hunts, hidden tx hunts, etc. In fact, something for every enthusiast.

The whole family is more than welcome and if they aren't interested in the radio activities, Canberra has a great deal to offer them as a major tourist attraction. As before registration will be 10/- which it is hoped will allow the club to "break even." The club has booked a limited amount of accommodation for those needing it.

Enquiries to John Weatherley, VK1QL, Secretary, P.O. Box 59, Kingston, A.C.T.

— . . . —

VICTORIA

WESTERN ZONE

Well, at this time of the year the harvest leaves very little time for us in this zone to devote to our hobby. However, activity has been reasonably constant with good conditions prevailing on the 80 m. Western Zone hook-ups.

Herb 3NN has had some good v.h.f. DXing, namely working VK2ZWV portable 2 m. on Mt. Kosciusko. Also he and Garry 3ZOS have managed to get a signal to and from Oscar IV. on 3/1/66. Other signals were heard on 432 via Oscar IV.

We now have Lyle VK3ASA back on the air with 60 watts a.m. on all the h.f. bands. Lyle has also been running A.O.C.P. classes weekly and in the near future new voices should arise in the zone.

Yours truly has been reasonably active on 6 m. working many VK's and a few ZL's, although 6 m. has been poor over the Christmas-New Year break. Unfortunately 2 m. ops. are down because of poor location of QTH, much better to go portable when the XYL grants a leave pass.

By the time these notes are printed Bob VK3ARM, holidaying in Geelong, should have been heard by many, also Tony 5ZAI on the Lofty Ranges with 2 m. portable gear.

Well, that about winds it up, hear you all about soon (new receiver on the way) and hope to see you at the State Convention in Ararat. 73's, Bill, VK3ZAX.

— . . . —

QUEENSLAND

Having taken the 40 metre dipole down for the 8th Jamboree-on-the-Aair, and not yet found time in daylight to get it up again, has left only the 20 metre ground plane for me to listen on, so do not have much news this month other than the doings on 20 metres. This band has been extremely active during November and the top DX boys in VK4 have certainly been contacting some new and rare countries. Africans being specially present, and someone told me they were at their best at 3 a.m.

Amongst those in Brisbane consistently heard chasing the DX are Tibby VK4HR, Norm VK4TY, Al VK4LT, Arthur VK4PX, Tom VK4TT, Sam VK4CZ, Jim VK4JA and Reg. VK4VX. From the country we hear the DX coming back to Hal VK4DO, Chilla VK4SD, Jack VK4SF and Ted VK4EJ. Short skip late in the month produced some very strong signals from the country boys into Brisbane, also from VK8AV and VK8KK.

For nearly three years the VK4 boys in Brisbane have been running a weekly net on 28.6 Mc. at 8.30 p.m. on Wednesdays. They always take a break for new stations, and last week it was pleasing to hear VK3QX and VK3IX come through. Signal strength was up and down but as the night proceeded signals seemed to improve. So interstate boys are asked to look on 28.6 Mcs. on Wednesdays and if signals break through, give us a shout, some of the boys also read c.w. Hope to hear you on 10 metres soon.

Activity amongst Amateurs in Townsville has flared up and several of the boys there are very active again on all bands. Moves are afoot to revive the Townsville Amateur Radio Club.

The Ipswich and District Amateur Radio Club are certainly an active body. This month sees them having their Annual Picnic, their Annual Christmas Dinner, and a send-off to the Club's Class Manager, Bob VK4LI, who has been transferred to Darwin. During 1965 the Club acquired grounds and has now submitted plans for a club house, which have been approved, so operation in 1966 will be to get the club house up and install all the radio gear. The club members run a net on 20 metres every Thursday night at 8 p.m. on 14.150 Mcs. and invite breakers to come in and chew the rag.

Congratulations to South Australia on their fine win in the 1965 R.D. Contest, certainly a very nice effort and a very well-deserved win.

Councillors of the Queensland Division of the Wireless Institute have asked me to convey to you their best wishes and a very DX-ful New Year, and to remind you that Council meets on the first Thursday of the month in the Social Services Clubrooms in the Valley in Brisbane, to which all Amateurs, especially interstate visitors are cordially invited. 73, Reg. VK4VX.

CENTRAL QUEENSLAND BRANCH

Activity is especially high with members of the C.Q. Branch with the breakthrough on the v.h.f. bands. 4ZLD, 4NG, 4ZAZ, 4ZDK, 4ZCK and 4FK all gave the band a good workout. On 20th November, Lyle 4ZLD worked one VK2, ten VK3s, six VK5s and three VK7s, and heard VK5 whilst in his car; sigs. 5 and 8 to 9. He heard several rag-chewing and not tuning the band to look for DX whilst the band was open. So fellows twiddle the dial now and then on 6.

W.I.C.E.N. exercises are on Tuesday nights, frequency 53.032 Mc., and VK4IR, our official club station, will be on consistently in the new year.

4FN getting ready for 6 with new tx, v.f.o. control and a 4-element beam. 4ZBG, our worthy Secretary, enjoyed his holidays and getting ready with 6 metre gear. 4DO had a few days in Brisbane, but only able to see Alan 4SS. Sorry he could not look up all his pals down there, but has been working them on 20 on short skip and plenty of DX, world wide.

The Branch meets every third Friday in the month in the Rockhampton Technical College and is always pleased to see visitors. Greetings to all for 1966. Hal VK4DO. —

SILENT KEY

It is with deep regret that we record the passing of:

VK4PH—P. W. Hay.

Deadline for Logs of the

ROSS A. HULL MEMORIAL TROPHY CONTEST

14th February, 1966.

Don't forget to put yours in.

TASMANIA

NORTH-WESTERN ZONE

The Annual Hamfest took place at Campbelltown on Sunday, 28th November. We were indeed fortunate with the weather, as the previous two days had been most unpleasant but that Sunday morning dawned fine and clear and developed into a perfect hot summer's day.

I tagged along with Ray 7ZRS and we managed to scrounge a No. 22 set, so the 100-mile trip from Devonport passed quickly, with a bit of mobile QSO'ing with George 7XL and his family who had left earlier and were ahead of us and travelling on a different route.

On arrival at the camp site we introduced ouselves at the H.Q. tent and were then issued with identification tags with our names and call signs printed on them—everyone then knew who was who, and it saved a lot of embarrassment later when some old buddy whose name you couldn't place suddenly accosted you unexpectedly!!

The prfe-lunch session was devoted to the 80 m. tx hunt. Everyone taking part was given a sealed envelope and told to drive towards Campbelltown and congregate at the road junction. We all did just that, and on opening the envelopes and piecing together the clues someone finally came across the vital "missing link" so to speak: it was a list of items which everyone had to collect or have in his possession—these included a soldering iron, W.I.A. badge, numerous coins such as penny, sixpence, shilling; also a mobile log sheet and such things as a bottle top, beer can, pine cone, a feather and a cigarette packet of a certain brand.

Ray and I were fortunate enough to come across the beer can, bottle top and pine cone; later we found a dead bird along the roadside, and although it had been in a state of rigor mortis for about 12 months (judging by the smell), the feathers were most valuable—we even did a swap for a coin in exchange for one of our reserve stock of feathers, but not having a soldering iron or W.I.A. badge with us we made our way back to the camp site thinking we might have a fair chance as we had collected all the other items. However, our hopes were dashed as Lee 7KC had already "clocked in" 100% and so took out top honours.

What show have you got against a bloke who carries his soldering iron in his hip pocket—faithfully wears his W.I.A. badge and religiously keeps a mobile log—even before he had entered the contest!!!

Anyway, we in the N.W. had the consolation of winning the wooden spoon with George 7XL arriving last home!!

Lunchtime saw small groups either grilling steaks or munching sandwiches. Amongst the N.W. Zone contingent I noticed Snow 7CH, Ken 7KH, Sid 7SF, Bruce Kelly, Bob Wilson and Winston Nichols from Burnie; also Brian Ayres, Ian Ellings, Robin —?, George 7XL and family, Max 7MX, Ray and myself from Devonport. Quite a good roll-up.

Now at this stage my clever piece of detective work came into play—I noticed (unseen) Ken 7KH chase around in the long grass and pounce on a couple of grasshoppers, like a five-year-old boy would do—place his victims in a tin, look furtively to the right and left, then proceed with rod and real towards the creek; minutes later Ken returned with a couple of nice-sized trout—how about that!!

Further—I noticed (again unseen) Ray 7ZRS and Bob Wilson don haversacks and armed with pickaxes proceed towards the hills—most suspicious!! On following them I found both hard at work fossicking around amongst the rocks muttering "agate," "petrified wood," etc., etc. . . . Anybody yet got any clues as to what they were up to?

The afternoon saw a rolling-pin throwing contest for XYLs, won again by Den 7DK's XYL. I noticed Max 7MX throwing sweets into the air and entertaining the kids like a real Santa Claus.

The contest for guessing the resonant frequency of the h.f. tuned circuit intrigued quite a few. George 7XL was the first to have a go—after many minutes of deliberation he finally gave a figure of 6 Mcs. and everyone knowing how "cluey" George is, plotted their "guesses" around that figure. Ted 7EJ was nearest with 5 Mcs. so Gearge was pretty close himself. The V.H.F. Section was won by Winston Nichols, so the N.W. Zone notched up a victory at last.

A general meeting held in the open for all and sundry to air their grievances produced some lively debating; such items as a.m. versus s.s.b., pep power input, wet or dry for next year's Hamfest (no further comment), were all discussed but the excitement really reached a pitch with a lively dog fight which developed, and which was eventually brought under control. So all is well that ends well. So chaps, for those who couldn't make it this year at Campbelltown that sums it up.

A Happy New Year to all. 73, David 7MS.

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Communications Transceiver, National NCX-5, 80-10 m., L.S.B.-U.S.B., full 500 Kc. coverage each band, plus extra 10 m. crystals, 200 w. pep input, £425, O.N.O.

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FOR SALE: Geloso 222TR, 6-band, a.m./c.w. Transmitter, perfect, "as new" condition, complete with circuit, manual, etc. Cost £120, sell for £65. VK4JI, P.O. Box 30, Goondiwindi (phone 684).

FOR SALE: T.C.A. Transceiver, 12v., d.c., converted to 146 Mcs. f.m. net, complete with crystals (Channel B), car cradle and antenna, unit in working order, receiver needs alignment, £20. Command Receiver, 6-9 Mc., working, £5. Also have 240v. a.c. Power Supply and 12v. d.c. Supply for the above Command Rx. Nuvistor Converter for 2 metres in full working order, £10. Home-brew G.D.O. with power supply, £5. Philips Mantel Radio, 5 valve, new, £10. All inquiries answered. Reply P.O. Box 206, Liverpool, N.S.W.

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SELL: Geloso G222 Transmitter, altered for relay control, £65. Geloso G209 Receiver, £95. Both units in good condition. H. T. Swanton, VK3AUS, 16 Karma Avenue, East Malvern, Vic. Phone 211-3716.

SELL: Radio and Hobbies, 1943-1961, Electronics World, 1959-1964, Popular Electronics and Electronics Illustrated, 1959-64, average price 4/-. prefer sell yearly lots or swap or buy parts for Deltahet Radio and Hobbies, October, 1964. C. MacKinnon, 173 Stewart St., Bathurst, N.S.W.

SELL: 100 and 500 Kc. Xtals, few left, cheap, $5.80. Also some power supplies units. A1, VK4SS, or ph. 46526 before 4 p.m. (Please add postage.)

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WANTED: Beam Direction Indicator, endless pot, aircraft tank, float unit. S. Widgery, 181 Victoria St., Ballarat.

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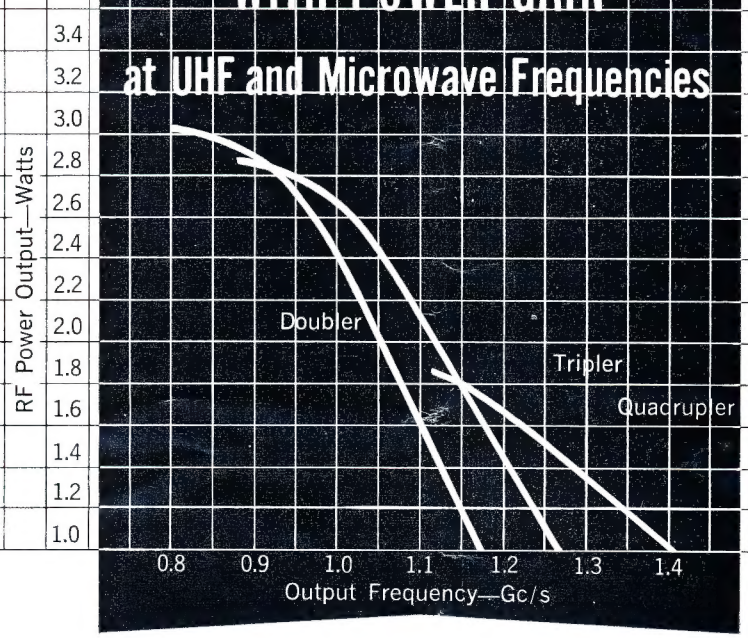

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V_C = 28 Volts
Case Temp. (T_C) = 25° C.

Now for the first time, you can achieve frequency multiplication with power gain at microwave frequencies with a single solid-state device, the new 2N4012 silicon transistor. With this new "overlay" unit, you can greatly simplify circuit design as well as reduce costs. At 1 Gc/s, one single 2N4012 can replace both the transistor power amplifier and varactor diode stages previously required.

Offering frequency multiplication with power gain in the 1 Gc/s region, the 2N4012 as a doubler, tripler, and even as a quadrupler, extends transistor performance into the microwave region with watts of power! When used in a common-emitter configuration, this transistor provides stable operation—power output varies smoothly with changes in power input.

Find out how the 2N4012 can help you cut costs by eliminating the varactor and reduce the size of hardware in space, military, and commercial applications. For technical data, price, and delivery, contact Amalgamated Wireless Valve Co. Pty. Ltd., 348 Victoria Road, Rydalmere, N.S.W., or any interstate office.

	2N4012 DOUBLER	2N4012 TRIPLER	
Output Power	3 (typ)	2.5 (min)	Watts
Output Frequency	800	1002	Mc/s
Input Frequency	400	334	Mc/s
Conversion Gain	4.8 (typ)	4 (min)	dB
MAXIMUM RATINGS	V_{CBO} 65 Volts V_{CEO} 40 Volts V_{CEV} 65 Volts V_{EBO} 4 Volts I_C 1.5 Amperes		

AWV

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